UNITED STATES OF AMERICA:
WAR DEPARTMENT.

MONTHLY WEATHER REVIEW.

(GENERAL WEATHER SERVICE OF THE UNITED STATES.)

FEBRUARY, 1890.

CONTENTS.

PREPARED UNDER THE DIRECTION OF
BRIGADIER GENERAL A. W. GREELY,
CHIEF SIGNAL OFFICER OF THE ARMY.

BY H. H. C. DUNWOODY,
CAPTAIN, 4TH ARTILLERY, SIGNAL OFFICER.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF WAR.

WASHINGTON CITY:
SIGNAL OFFICE.
1890.

List of merchant marine steam and sailing vessels from which International Meteorological reports were received at the office of the Chief Signal Officer, U. S. Army, Washington City, in time to be used in the preparation of the Monthly Weather Review for February, 1890.

	Name of vessel.	Captain.
Br.	s. s. Adriatic	J. G. Cameron.
	Ailsa	J. W. Morris.
	Alaska	W. I. Robertson.
	Albano	C. A. Murray.
	Albany	H. A. Gough.
	Alcne	E. J. Seiders.
Am.	Algiers	F. W. Mason.
Ger.	Allemannia	Geo. Thiele.
	Aller	H. Christoffers.
Br.	Alvena	F. McKay.
	Alvo	David Williams.
Ger.	America	A. Kohlmann.
Dtch.	Amsterdam	O. Stenger.
Br.	Anchoria	A. Campbell.
	Angers	J. Pinkham.
	Anjer Head	C. Pinkham.
	Arizona	M. Brooks.
	Ascania	G. T. Frechlich.
	Athos	H. Low.
	Aurania	R. McKay.
	Baltimore	C. J. Simpson.
	Barrowmore	W. H. Moore.
	Batavia	J. C. Williamson.
	Bavarian	M. Fitt.
Belg.	Belgenland	A. R. Mills.
Br.	Bengore Head	D. Smith.
Sp.	Benito Estenger	E. F. Canal.
Ger.	Berlin	A. von Collen.
Am.	Bernard	A. Byrnes.
Br.	Blakemoor	G. Harrison.
Ger.	Bohemia	H. Leithauser.
Br.	Bordered	F. Manley.
Fr.	Borussia	F. Reuter.
Br.	Boston City	G. E. Douglas.
	Bostonian	W. H. Trant.
	Bokhnia	G. B. Watt.
Fr.	Britannia	Parasols.
Br.	Britannic	H. Davison.
	British Empire	R. Wills.
	British Prince	S. Nowell.
	British Princess	E. H. Freeth.
	Brooklyn City	W. Fitt.
	Buffalo	J. H. Malet.
	Bulgarian	R. Leask.
	California	R. T. Garvie.
	Californian	J. W. Pickthall.
	Camden	W. N. James.
	Camellia	E. Penney.
	Caribbean	H. Daniel.
	Caspian	A. McDougall.
	Catalonia	J. J. Atkin.
	Celtic	H. Parsell.
	Cephalonia	T. Dutton.
Am.	Chalmette	J. B. Percy.
Fr.	Chateau Ladite	M. C. Ollivier.
Am.	Cherokee	H. A. Bearse.
Br.	Chicago	G. Scarr.
	Circassia	H. Young.
	Circassian	R. Barrett.
Am.	City of Alexandria	J. McIntosh.
Br.	City of Berlin	Francis S. Land.
	City of Chester	A. W. Lewis.
	City of Chicago	A. Bedford.
	City of Newcastle	R. Townsend.
Am.	City of Para	J. L. Lockwood.
Br.	City of Paris	F. Watkins.
Am.	City of Savannah	C. B. Googins.
	City of Washington	J. W Reynolds.
Br.	Coban	R. Fraser.
	Colina	R. C. Jennings.
Ger.	Colonia	A. Worpel.
Am.	Colorado	W. F. Evans.
Br.	Cornucopia	J. Smith.
	Crane	G. J. Robinson.
Ger.	Cremon	F. H. Schwaner.
Br.	Croma	W. R. Lord.
	Crystal	R. B. Stannard.
	Cuno	E. Nicol.
	Dalton	J. Russell.
	Damara	G. Dixon.
Ger.	Dania	H. Barends.
Br.	Darial	A. H. F. Young.
	Denmark	R. S. Rigby.
	Devonia	Jno. Craig.
	Durham City	J. A. Jacobsen.
	Earnwell	C. N. Mumford.
	Egyptian Monarch	T. M. Irvin.
Ger.	Elder	H. Baur.
	Elbe	C. Thalenhorst.
Br.	Elgiva	H. Bermpohl.
Am.	El Monte	R. B. Quick.
	El Paso	H. S. Quick.
Ger.	Ems	R. Sander.
It.	Entella	V. Bruno.
Br.	Erato	F. Simmons.
	Esk	T. K. Erham.
	Ethiopia	John Wilson.
Am.	Excelsior	H. L. Higgins.
Br.	Exeter City	T. L. Weiss.
	Federation	R. Pinkham.
	Fitzroy	W. Sandison.
Belg.	Friesland	W. G. Randle.
Ger.	Fulda	R. Ringk.
Br.	Gaelic	W. G. Pearne.
	Galileo	W. Magee.
	Gallia	M. Murphy.
Ger.	Gellert	C. Kaempf.
Br.	Germanic	P. J. Irving.
	Gilsland	M. L. Robinson.
	Glengyle	K. J. Kasson.
	Glenogle	W. E. Duke.
	Glenrath	C. L. Anderson.
Ger.	Gluckauf	V. Szymanski.
Ger.	Gothia	A. Kuhn.

	Name of vessel.	Captain.
Br.	s. s. Governor	J. Reynolds.
	Greece	A. J. Jeffrey.
Span.	Guido	E. de Lachlondo.
Ger.	Gut Heil	A. Buhner.
	Hafis	P. Hinsch.
Br.	Hampton	H. Bower.
	Haytian	J. Coward.
Dan.	Hekla	A. G. Thomsen.
Br.	Helvetia	G. Cochrane.
Ger.	Hermann	Bodeker.
Belg.	Hermann	D. Meyer.
Br.	Himloo	Jas. Douglas.
	Holland	Thos. Foote.
Ger.	Holsatia	G. Busch.
Br.	India	B. Jamieson.
Am.	Indiana	W. J. Boggs.
It.	Iniziativa	A. Consonesi.
Br.	Iowa	E. W. Owens.
	Irlington	C. W. Barnard.
	Istrian	A. W. Ball.
	Italy	W. Pearce.
	Ixia	Wm. Churnside.
	Jamaician	D. Edwards.
	Joshua Nicholson	W. Tyner.
	Karoon	W. Wandless.
	Kansas	A. Fenton.
	Kepler	M. Flett.
Am.	Knickerbocker	E. Kimble.
Fr.	La Bretagne	M. de Jousselin.
	La Champagne	Boyer.
Br.	La Flandre	M. W. Ninnes.
Fr.	La Gascogne	Santelli.
Ger.	Lahn	H. Hellmers.
Br.	Lake Huron	P. D. Murray.
	Lake Nepigon	C. F. Herriman.
	Lake Ontario	H. Campbell.
	Lake Superior	Wm. Stewart.
Fr.	La Normandie	G Collier.
Span.	Leonora	J. de Alegria.
Br.	Leona	James Bolger.
	Lepanto	H. S. S. Wise.
	Lord Clive	P. Urquhart.
	Lord Gough	E. M. Hughes.
	Lord O'Neill	A. Ferris.
Am.	Louisiana	E. V. Gager.
Br.	Maine	H. Bocquet.
	Marengo	W. Whitton.
Ger.	Marsala	N. Maas.
Br.	Maryland	A. H. Luckhurst.
	Mascotte	Jas. Ross.
Span.	Mendos Nunes	D. J. Lopez.
Br.	Mentmore	R. Waite.
	Michigan	S. Walters.
	Minia	Sam. Trott.
	Minnesota	R. Griffiths.
	Mira	G. Jeffrey.
	Missouri	T. F. Gates.
	Montana	W. H. Williams.
Ger.	Moravia	O. Winkler.
Br.	Moruca	J. A. Bradfoot.
Am.	Mount Edgecombe	J. Wetherell.
	Naranja	J. Silly.
Belg.	Nederland	E. Bence.
Br.	Neptuno	A. Chrystal.
	Nessmore	G. Elliott.
	Nestorian	J. France.
Br.	Nevada	J. A. R. Cushing.
Am.	New Orleans	T. P. C. Halsey.
Br.	Newton	W. P. Kelly.
Belg.	Noordland	H. E. Nickels.
Br.	Norseman	R. Williams.
	Norwegian	W. Christie.
Am.	Nueces	Sam Risk.
Dtch.	Obdam	G. Bakker.
Ger.	Ocean	A. Voge.
Am.	Ohio	R. W. Sargent.
Br.	Ohio	P. L. Moore.
	Ontario	W. P. Couch.
	Oregon	H. C. Williams.
	Orinoco	J. S. Garvin.
	Othello	H. Mundy.
	Ovingham	M. S. Stephenson.
Hay.	Ozama	C. O. Rockwell.
Br.	Pavonia	A. McKay.
Dtch.	P. Caland	W. Ponsen.
Belg.	Penniand	H. Buschmann.
Br.	Peruvian	J. M. Wallace.
Ger.	Polaris	F. Schroder.
	Polynesia	G. Franck.
Br.	Pontiac	R. Blythe.
Am.	Portia	F. Ash.
Dtch.	Prins Maurits	A. Sibbelee.
Br.	Professor	G. H. Keller.
	Prussian	C. H. Calvert.
	Prydian	M. Parry.
	Red Sea	Chas. Baker.
Ger.	Rhaetia	H. Vogelgesang.
	Rhein	W. Kuhlmann.
Belg.	Rhynland	R. Weyer.
Br.	Rialto	J. Akester.
	Richmond	E. S. Clapp.
	Ripon City	J. Brotchie.
	Roman	E. Maddox.
	Rochdale	F. D. Tindall.
	Ross-shire	W. Hewat.
Dtch.	Rotterdam	H. C. v. d. Zee.
Ger.	Rugia	R. Kariowa.
Br.	Runic	T. P. Thompson.
Ger.	Saale	H. Richter.
Am.	Saginaw	R. B. Kelly.
Br.	Saint Ronans	H. Campbell.
	Samaria	T. Hewitson.
	Santiago	J. B. Allen.
Am.	Saratoga	C. P. Leighton.

	Name of vessel.	Captain.
Br.	s. s. Sardinian	W. Richardson.
	Sarnia	J. Gibson.
Span.	Saturina	F. de Bengoa.
Br.	Scandinavian	J. Park.
Am.	Seneca	F. Stevens.
Br.	Servia	H. Walker.
	Siberian	R. P. Moore.
	Sicilia	E. Hocken.
Nor.	Sif	H. Bentzon.
Br.	Spain	W. A. Griffiths.
	State of Alabama	L. S. Lewis.
	State of Indiana	A. Ritchie.
	State of Nevada	J. A. Stewart.
	State of Pennsylvania	A. J. A. Mann.
	State of Texas	G. Williams.
	Strathairly	W. Winn.
Ger.	Suevia	C. Ludwig.
Belg.	Switzerland	J. Ueberweg.
Ger.	Taosmina	G. W. Loch.
Br.	Teutonic	H. Parsell.
	Texan	T. T. King.
	Thanemore	A. J. Baxter.
	The Queen	T. P. Heeley.
Dan.	Thingvalla	S. T. H. Laub.
Br.	Timor	W. Hodgson.
	Toronto	J. MacAuley.
	Tower Hill	R. Bennett.
Nor.	Tordenskjold	C. Uchermann.
Ger.	Trave	W. Willigerod.
Br.	Tresco	J. R. Barber.
	Trimeria	G. Mitchell.
	Trinidad	W. J. Fraser.
	Ulunda	T. Clark.
	Umbria	W. McMickan.
	Vancouver	C. J. Lindall.
	Venetian	E. Parry.
Nor.	Viking	F. Haslund.
Br.	Viola	L. Murray.
	Virginian	W. C. Fry.
Belg.	Waesland	C. H. Grant.
Ger.	Werra	R. Bussius.
	Weser	H. Bruns.
Belg.	Westernland	J. C. Jamison.
Br.	Wetherly	J. W. Harrison.
	William Cliff	C. Winder.
	Wingate	J. Thompson.
	Wisconsin	J. P. Worral.
	Wylo	T. L. Rogers.
	Wyoming	C. L. Rigby.
	Yedmandale	R. W. Webber.
	United States Naval.	
	U. S. C. S. A. D. Bache	J. F. Moser.
	U. S. F. C. Albatross	Z. L. Tanner.
	U. S. S. Despatch	W. S. Cowles.
	U. S. C. S. schr. Eagre	W. P. Elliott.
	U. S. C. S. Endeavor	A. L. Hall.
	U. S. S. Enterprise	B. H. McCalla.
	U. S. S. Galena	G. W. Sumner.
	U. S. C. S. G. S. Blake	C. E. Vreeland.
	U. S. C. S. Gedney	J. M. Helm.
	U. S. S. Independence	J. W. Philip.
	U. S. S. Kearsage	H. Elmer.
	U. S. C. & G. S. McArthur	D. H. Mahan.
	U. S. S. Minnesota	G. C. Wiltse.
	U. S. S. Monongahela	W. C. Gibson.
	U. S. S. New Hampshire	F. J. Higginson.
	U. S. S. Thetis	C. H. Stockton.
	Sailing vessels.	
Ger.	bk. Agnes	Hirdes.
Br.	bgt. Argyll	A. G. Virgie.
	sp. Aristomene	J. W. Attridge.
Am.	bkt. Bonnie Doon	Chas. Burgess.
	schr. Clara Godwin	Frank Wyman.
Ger.	sp. Cleopatra	A. v. Seggern.
Am.	bg. Edith	W. G. Foster.
Br.	sp. Ellesmere	Summers.
Am.	schr. Ettie H. Lister	S. D. Mason.
	Florence Leland	F. V. Watts.
	Florence Randall	J. L. Randall.
	bk. Flourine	W. Andersen.
Br.	sp. Geo. Thompson	J. Barneson.
Am.	schr. Harold C. Beecher	J. E. Nickerson.
Am.	bg. H. B. Hussey	G. W. Hodgdon.
	sp. Henry Villard	F. B. Perkins.
Br.	bk. Iodine	Adam Smith.
Am.	yacht Iroquois	R. N. Ellis.
	bkt. John J. Marsh	F. P. Whittier.
	schr. John R. Bergen	W. H. Squires.
	bk. John R. Stanhope	J. B. Norton.
	bkt. Jose E. Moore	A. Leonhard.
Port.	bk. Julius	F. D. Vieira.
Am.	bg. L. F. Munson	J. V. McKowen.
	sp. Light vessel No. 45	Andrew Jackson.
	bg. Lillie Souliard	A. D. Hilton.
	L. Staples	J. P. Stowers.
	schr. Maud H. Dudley	D. W. Oliver.
Br.	bk. Minden	R. MacDonald.
	schr. Molega	James Lohnes.
Am.	Otello	M. J. Bond.
	Phebe	M. Medero.
Ger.	bk. Pillau	G. Gerlach.
Br.	bk. Recovery	Chas. Davison.
Am.	Saint James	W. D. Burnham.
Br.	bg. Solario	A. Reymer.
	bk. Sodium	W. Mauson.
Am.	bg. T. Towner	C. E. Dayton.
Br.	sp. Troop	D. W. Corning.
It.	bk. Virgine della Guardia	S. Olbano.
Am.	schr. Warren Adams	C. A. Colcord.
Br.	Wm. Armstrong	J. McKenzie.
Am.	schr. Wm. F. Green	W. E. Crockett.
	schr. Wm. Wilson	C. W. Powell.

UNITED STATES SIGNAL SERVICE

MONTHLY WEATHER REVIEW.

VOL. XVIII. WASHINGTON CITY, FEBRUARY, 1890. No. 2.

INTRODUCTION.

This REVIEW is based on reports for February, 1890, from 2,209 regular and voluntary observers. These reports are classified as follows: 172 reports from Signal Service stations; 120 reports from United States Army post surgeons; 29 reports of rainfall observations of the United States Geological Survey in Arizona, New Mexico, and Colorado; 1,348 monthly reports from state weather service and voluntary observers; 25 reports from Canadian stations; 176 reports through the Central Pacific Railway Company; 339 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Meteorological Report of the Missouri State Board of Agriculture, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, North and South Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, and Texas, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR FEBRUARY, 1890.

Well-defined tornadoes were reported in Geneva county, Alabama, on the 7th, and in Talladega and Pickens counties, Alabama, and in Kemper county, Mississippi, on the 27th. Destructive storms prevailed in Fayette, Centre, and Cambria counties, Pennsylvania, on the 7th, and along the New Jersey coast from the 7th to 9th. Severe storms occurred at Gainesville, Tex., and Brownsville, Tenn., on the 25th, and on the 26th destructive storms were reported at Marksville, La., Johnsonville, Tenn,, and Paducah, Ky. Extreme wind-velocities of ninety-six miles per hour were noted at Fort Buford, N. Dak., on the 4th, and at Lexington, Ky., on the 26th. A remarkable hail storm was reported at Livingston, Ala., on the 24th.

The month was warmer than usual, except on the Pacific coast and the adjoining part of the plateau region and over the northern part of the country west of the one hundredth meridian. The departures above the average February temperature varied from 5° to 9° in areas east of the Rocky Mountains, and in north-central Montana and the British Possessions to the northward the month averaged about 10° cooler than usual. On the Pacific coast the departures below the average temperature for February were greatest in northern California, where they exceeded 3°, and at San Diego, Cal., the temperature was slightly above the average. In the Atlantic coast and Gulf states and in areas in the Ohio valley and Tennessee the current month was the warmest February in the history of the Signal Service, and the continued high temperature of this and the preceding two months marks the winter of 1889–'90 as the warmest on record over a greater part of the country east of the Mississippi River. The highest maximum temperature reported was 101° at Cameron, La., on the 25th, and the lowest minimum temperature noted was —46° at Camp Poplar River, Mont., and Fort Pembina, N. Dak., on the 26th. At stations in the Atlantic coast and Gulf states, in the Lake region, Tennessee, the upper Mississippi and Missouri valleys, along the eastern slope of the Rocky Mountains, and in the southern plateau region the maximum temperature was as high or higher, and at stations on the Pacific coast the minimum temperature was as low or lower than previously reported for February. The remarkable cold wave which overspread the Gulf States during the 27th and 28th was attended by the coldest weather of the season in the Southern States, a severe "norther" in Texas, and in Alabama, Mississippi, Louisiana, and Texas by killing frost which nipped fruit buds and greatly damaged early vegetation and crops. The cold wave of the latter part of the month on the north Pacific coast and over the middle and northern plateau regions caused a great loss of stock on the ranges in eastern Oregon and northeastern Nevada.

The precipitation was generally in excess of the average for the month in the Saint Lawrence Valley and thence southwestward to northern Arkansas, in the Lake region, in the middle and northern plateau regions, in Oregon, and along the middle Pacific coast; elsewhere it was generally deficient. The greatest excesses in precipitation were noted in north-central Tennessee, where the rainfall was nearly six inches, and in west-central Oregon, where it was more than four inches at Roseburgh and Eola, and more than five inches at Albany greater than the average precipitation for February. In southeastern Indiana, extreme southern Illinois, Tennessee, extreme north-central Michigan, and northwestern Oregon, the excesses over the February average amounted to more than three inches. The greatest deficiencies in precipitation were noted on the south coast of New England, where, at Block Island, R. I., the total amount for the month was over four inches less than the February average, and the deficiences were more than two inches on the North Carolina coast, thence southward to northern Florida, and thence westward along the Gulf coast to southern Louisiana, in central Illinois, extreme southeastern Arizona, extreme northwestern Washington, and at Los Angeles, Cal. The heaviest monthly precipitation reported was 23.68, at Ellensburgh, Oregon; the monthly precipitation exceeded ten inches in northwestern California, in eastern California between the thirty-eighth and thirty-ninth parallels, along and near the west coast of Oregon, in central Arkansas, central Mississippi, northeastern Alabama, northwestern Georgia, central and southwestern Tennessee, southwestern Kentucky, southwestern Indiana, and extreme western North Carolina; and at stations in central Texas, extreme northern Michigan, northern Nebraska, west-central Colorado, and western Oregon the precipitation was the heaviest ever re-

ported for February. Within an area extending over the northern part of the Panhandle of Texas, and thence westward over northeastern New Mexico, and in south-central New Mexico and extreme western Texas no precipitation was reported; and at stations in southeastern North Carolina, western Florida, south-central North Dakota, southern New Mexico, and southeastern Arizona the precipitation was the least ever reported for February. The greatest depth of snowfall was reported along the line of the Central Pacific Railroad in Placer county, Cal., where it amounted to one hundred and forty-nine inches at Cisco, and the great depth of snow in cuts along the line of the railroad crossing the summit of the Sierra Nevada Mountains caused serious interruption to the train service throughout a greater portion of the month.

Lakes Erie and Huron were reported practically open to navigation during the month. Very destructive floods occurred in western Oregon and northern California during the early part of the month. The rivers were generally above the danger line in the Ohio, Cumberland, Tennessee, and lower Mississippi valleys during the latter part of the month, and great damage was caused by the overflow of streams in Ohio and west-central Kentucky. The Verde and Gila rivers, Arizona, overflowed their banks, and a large storage dam on the Hassayampa River, Arizona, gave way, causing loss of life and destruction of property.

Unusually well-defined and brilliant parhelia were observed at Milwaukee, Wis., during the afternoon of the 16th, and at Era, Idaho, during the morning of the 25th.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for February, 1890, as determined from observations taken daily at 8 a. m. and 8. p. m. (75th meridian time), is shown on chart ii by isobars. The departure of the mean pressure for February, obtained from observations taken twice daily at the hours named from that determined from hourly observations, varied at the stations named below, as follows:

Station.	Departure.	Station.	Departure.
Eastport, Me	+.008	Saint Louis, Mo	+.003
Boston, Mass	+.012	Chicago, Ill	+.005
New York City	+.009	Saint Paul, Minn	+.002
Philadelphia, Pa	+.010	New Orleans, La	−.006
Washington City	+.004	Galveston, Tex	−.002
Savannah, Ga	+.009	Santa Fé, N. Mex	−.012
Buffalo, N. Y	+.012	Denver, Colo	−.004
Detroit, Mich	+.005	Salt Lake City, Utah	−.003
Cincinnati, Ohio	+.007	San Francisco, Cal	−.017
Memphis, Tenn	+.002	San Diego, Cal	−.015

For February, 1890, the mean pressure was highest within an area which extended from the middle Missouri valley northward and northwestward to the Saskatchewan Valley, where it was above 30.15, and where, at Swift Current, N. W. T., a mean reading of 30.24 was reported. The mean values were also above 30.15 along the Atlantic coast between the twenty-seventh and thirty-fifth parallels. From central New England southwestward to the east Gulf coast, in the interior of the country between the Mississippi River and the Rocky Mountains and north of the thirty-seventh parallel, and in west-central California the mean pressure was above 30.10. The mean pressure was lowest on the north Pacific coast, where it fell below 30.00, the lowest mean reading, 29.96, being noted at Fort Canby, Wash., and the mean values fell below 30.00 at stations in the eastern part of the middle plateau.

A comparison of the pressure chart for February, 1890, with that of the preceding month shows but slight changes in the positions of the areas of highest and lowest pressure. There has been an eastward movement of the area of high pressure over the southeastern states, and a decrease in mean pressure of about .15 of an inch at south Atlantic coast stations, and within the area of high pressure central in each month over and north of the middle Missouri valley there has been a decrease in mean pressure of about .10 of an inch from North Dakota to Kansas, and a slight decrease in the Saskatchewan Valley. Within the area of low pressure which occupied the north Pacific coast for each month there has been an increase in mean pressure of more than .10 of an inch. In the preceding month there was a range in mean pressure of more than .45 between the Atlantic and Pacific coasts, and a range of more than .40 between the middle Missouri valley and the Pacific coast, while for the current month the ranges in mean pressure between the Atlantic and Pacific coasts amounted to but .20, and the range between the middle Missouri valley and the Pacific coast varied from .15 to .20. The changes in mean pressure referred to caused a decrease in pressure over the entire country, except on the north Pacific coast; the most marked decrease in pressure being shown over the southeastern part of the country, where the mean pressure for February was more than .15 lower than for the preceding month, while on the north Pacific coast near the mouth of the Columbia River there was an increase in mean pressure of more than .10.

The mean pressure for February, 1890, was generally above the normal at Atlantic coast stations from the Gulf of Saint Lawrence to southern Florida, and in the middle and upper Missouri and Red River of the North valleys; elsewhere it was generally below the normal. The greatest departures above the normal pressure occurred in Nova Scotia, New Brunswick, and over a greater part of New England, where they exceeded .05, and the most marked departures below the normal pressure were noted from Arkansas and Indian Territory southward to the west Gulf coast, and from the north Pacific coast southeastward to northern Nevada and northern Utah, where they were more than .05.

BAROMETRIC RANGES.

The monthly barometric ranges at the several Signal Service stations are shown in the table of miscellaneous meteorological data. The general rule, to which the monthly barometric ranges over the United States are found to conform, is that they increase with the latitude and decrease slightly, though somewhat irregularly, with increasing longitude. In February, 1890, the monthly ranges were greatest over extreme eastern New England, where they exceeded 1.50, whence they decreased southward to less than .30 over southern Florida, westward to less than 1.15 in the upper Missouri valley, from which region they increased to more than 1.35 in the upper valley of the Columbia River, and thence decreased to 1.20 on the north Pacific coast. Along the Atlantic coast the monthly ranges varied from .27 at Key West, Fla., to 1.53 at Eastport, Me.; between the eighty-second and ninety-second meridians, .46 at Cedar Keys, Fla., to 1.35 at Sault de Ste. Marie, Mich.; between the Mississippi River and the Rocky Mountains, .71 at Corpus Christi, Tex., to 1.23 at Bismarck, N. Dak.; in the Rocky Mountain and plateau regions, .47 at Fort Grant, Ariz., to 1.38 at Spokane Falls, Wash.; on the Pacific coast, .42 at San Diego, Cal., to 1.20 at Fort Canby, Wash.

AREAS OF HIGH PRESSURE.

Nine areas of high pressure were observed during the month of February, four of which first appeared in the regions north of North Dakota and Montana; three approached from the north Pacific coast; and two from the Hudson Bay region. Seven of these areas of high pressure were traced eastward to the Atlantic coast, the general direction of movement being slightly to the south of east; two disappeared by gradual decrease of pressure west of the Mississippi. Those areas of high pressure observed on the Pacific coast were apparently moving in a northeasterly direction when first observed, but after passing to the east of the coast line the direction of

movement changed to the southeast. One disappeared while central over Texas; one after reaching the central Rocky Mountain region passed directly eastward to the Atlantic coast, and the third after crossing the Rocky Mountains to the north of Montana passed eastward to the Atlantic coast.

The following is a general description of the weather conditions attending the movement of each area of high pressure observed during the month:

I.—The month opened with abnormally high pressure north of the Lake region, while the pressure was abnormally low on the north Pacific coast, north of North Dakota, and northeast of New England. By the morning of the 2d the pressure had increased along the Atlantic coast, the centre of greatest pressure being near Halifax, N. S., where the barometer had risen about three-fourths of an inch in twenty-four hours. The storm on the Pacific coast had moved eastward, extending over the northern Rocky Mountain region, and a well-marked barometric gradient existed between Nova Scotia and Montana, the difference of barometric pressure being about one and one-half inch. The barometric pressure decreased rapidly on the north Atlantic coast during the 2d, the principal area of high pressure apparently moving eastward from Nova Scotia, while the barometer continued high over the Southern States east of the Mississippi.

II.—During the easterly movement of the storm previously referred to as central on the Pacific coast, this area of high pressure appeared to the north of Montana, and the movement of cold air to the southward during the 2d resulted in the formation of an area of low pressure over Lake Superior, while that over Montana was apparently forced to the westward. It passed rapidly eastward north of the Lake region to the Saint Lawrence Valley where it disappeared quickly during the 4th, owing to the advance of a depression from the Lake region.

III.—This area of high pressure had its origin in the same locality as that given to the preceding one, and passed eastward north of the Lake region to the Saint Lawrence Valley, but slightly to the south of the course pursued by the previous area. It also increased in intensity during the easterly movement, and while passing over New England on the 7th the attending conditions were felt as far south as Florida. The pressure increased during the easterly movement, and the maximum, 30.78, occurred at Halifax, N. S., on the 7th when the centre was near that station. Strong northeasterly gales occurred off the south New England and south Atlantic coasts during the 6th and 7th, while this area was passing eastward from the Saint Lawrence Valley.

IV.—Was observed north of Montana on the 7th, while the previous reports indicate that it probably had its origin over the north Pacific. The telegraphic reports of the 6th show that an area of high pressure covered the Pacific coast and plateau regions, and that the direction of movement was to the north of east, following an area of low pressure from the Pacific coast. After passing to the east of the Rocky Mountains on the 7th, it moved eastward north of the Lake region, while a secondary area of high pressure developed over Indian Territory and moved to the northeastward, passing over the Ohio Valley during the 8th and over the lower lake region during the 9th, uniting with the principal area of high pressure far to the north of Lake Ontario on the afternoon of that date. After reaching the Saint Lawrence Valley the direction changed to southward, and on the morning of the 11th it was central over New England, and included within its area the greater portion of the southern, middle, and New England states. It disappeared to the eastward of the Atlantic coast during the 11th.

V.—Was first observed on the north Pacific coast on the 10th, although there was some indication of its approach from the westward on the 9th. A well-marked area of low pressure covered the central Rocky Mountain region on the morning of the 10th, and this was forced to the southward over the Rio Grande Valley and apparently into the west Gulf by the advance of this area of high pressure over the Rocky Mountain region. On the 12th it included within its area the entire country except the Saint Lawrence Valley and northern New England, it being central over western Colorado. It moved eastward from Colorado during the 12th, attended by generally fair weather, the pressure decreasing rapidly during the easterly movement, and it disappeared to the east of the coast line during the 13th.

VI.—This area of high pressure also appeared on the Pacific coast, where it was observed on the 13th. It moved eastward south of the course followed by the previous area, passing from the north Pacific coast over the central plateau region on the 13th, crossing the central Rocky Mountain region on the 14th, and over southern Texas on the 15th, where it disappeared.

VII and VIII.—On the 15th these areas of high pressure were observed to the north of Montana and Minnesota, the former apparently being secondary, which separated from the principal area and moved southward to the Saint Lawrence Valley during the 15th, and extended southward over the eastern portion of the United States on the 16th, disappearing to the east of the south Atlantic coast on the night of the 16th, although the pressure in that region remained relatively high until the morning of the 18th. The principal area of high pressure, number viii, remained almost stationary during five days, covering the region north of Montana and North Dakota from the 15th to the 20th, inclusive. and extending southward over the eastern slope of the Rocky Mountains to Texas on the 20th, while the centre remained north of Montana. On the 21st it moved rapidly southeastward and its influence was felt over the entire country east of the Rocky Mountains. It was central over Illinois on the afternoon of the 21st, extending from the Gulf to the north of the Lake region and from the Atlantic coast to Colorado. The southeasterly movement continued during the 22d, and although the pressure decreased rapidly at the centre, this area was readily located on the 8 p. m. weather map of the 22d off the south Atlantic coast, and the succeeding reports indicate that the southeasterly movement continued after that date.

IX.—Was observed north of Montana on the 23d, and, as in the case of the previous area, remained almost stationary in that region, no decided movement being observed from the 23d until the 26th, after which this area extended rapidly southward over the eastern slope of the Rocky Mountains, while a secondary area formed over the northern plateau region to the west of the Rocky Mountains. These two areas moved to the southward, attended by the most severe cold wave of the month over the central valleys and Southern States. Killing frosts occurred in southern California, a severe norther in Texas, and the coldest weather of the season in the Southern States occurred during the passage of the cold wave attending this area of high pressure.

AREAS OF LOW PRESSURE.

Fifteen areas of low pressure were observed during the month of February, seven of which were traced from the Pacific coast or plateau region; eleven reached the Atlantic coast or the Saint Lawrence Valley; and but one passed eastward south of New England. The general direction of movement was to the south of east while the centres remained west of the one hundredth meridian, and this direction continued to the east of that meridian in the cases where the areas of low pressure passed eastward over the British Possessions, but the eight areas of low pressure which passed eastward over the eastern slope of the Rocky Mountains, within the limits of the United States, all moved to the north of east, the direction of the movement inclining more to the northward in those areas passing over the lower latitudes. Compared with previous months the areas of low pressure were more numerous, and have extended southward over the western half of the continent, while the region of greatest frequency continues over the Saint Lawrence Valley. The following is a brief description of the movements of each area of low pressure, obtained from the daily weather charts:

I and II.—At the opening of the month a storm of considerable energy was central on the north Pacific coast, where heavy rains and southerly gales continued during the 1st and 2d. This storm advanced eastward to the Rocky Mountain regions, and on the morning of the 2d a trough of low pressure extended from Minnesota westward to the Pacific. The advance of an area of high pressure from the northward resulted in the formation of two disturbances, one of which continued its easterly course north of the Lake region to the lower Saint Lawrence valley, where it disappeared after the 3d, and the other, after being forced slightly to the southward over Montana during the 2d, was replaced by increase of pressure over that section, the barometer remaining low, however, on the north Pacific coast, where low area number ii quickly formed, attended by continued heavy rains and strong southerly gales on the 3d. This storm also passed to the eastward along the northern border of the United States, following the same general course as that given to number i, but over the west half of the continent the centre of disturbance was slightly to the north of the track of number i, while over the east half it was slightly south of it. Both of these disturbances were attended by general rains, but the latter was much more intense, and caused dangerous gales in the Lake region and along the Atlantic coast north of Hatteras, N. C., from the 4th to the 6th. In the case of number ii the barometer continued to fall at the centre during the easterly movement from the centre of the continent, although there was a slight increase during the transit from the north Pacific coast to Manitoba. On the Pacific coast the barometer was 29.24 on the 3d. At Saint Vincent, Minn., it was 29.36 on the 4th, and at Father Point, Quebec, it was 29.02 on the 5th, and probably 28.96 at Bird Rocks, Gulf of Saint Lawrence, on the 5th. It will be seen from chart i that low areas i and ii are the only disturbances that passed eastward from the Pacific to the Atlantic coasts attended by such conditions as to render it possible to locate the centre of the disturbance at each telegraphic report.

III.—Was a feeble barometric disturbance which apparently developed over the southern plateau region during the 5th, and, although not clearly defined, it apparently moved southeastward to the lower Rio Grande valley, the southeasterly course being due to the existence of an area of high pressure to the northeast. After reaching southern Texas it increased greatly in energy and was attended by very heavy rains in the above named state, and on the west Gulf coast high southerly winds were quickly followed by a norther as the centre passed to the eastward. After the disturbance reached the southern portion of Georgia, attended by high winds in northern Florida on the 8th, it disappeared to the eastward, the telegraphic reports indicating that the storm was decreasing in energy.

IV.—Was a depression in the northern portion of the barometric trough which extended over the Rocky Mountain regions on the 6th, within the southern portion of which developed the storm traced as number iii. This depression moved from the region north of Montana to near Lake Superior during the 6th, thence southward to Lake Michigan on the 7th, and in connection with low area number iii, which at that time was passing over the east Gulf states, the storm area included the eastern half of the United States. After reaching Lake Michigan the direction of movement changed to northeast, and the storm passed down the Saint Lawrence valley with increasing force, the barometer falling to 29.14 at Anticosti, Gulf of Saint Lawrence, on the 8th, when the centre was near that station. The westerly gales attending this storm were most severe in the lower lake region and on the North Carolina coast, where a maximum velocity of 60 miles per hour was reported. Westerly gales also occurred in the Maritime Provinces, where they continued until the 9th.

V and VI.—Appeared on the north Pacific coast on the 7th and 9th, respectively, and after moving eastward to the region north of Montana, the former passed southeastward over the upper Missouri valley and disappeared before reaching the Lake region, while the latter followed rapidly southward over the Rocky Mountain regions to the Rio Grande Valley, attended by general snows and followed by a cold wave and high northerly winds along the eastern slope of the Rocky Mountains. The centre of this disturbance cannot be definitely traced after it reached the central Rio Grande valley, but reports indicate that it passed over the west Gulf.

VII.—When the area of low pressure traced as number vi was central over Texas on the 11th, a trough of low pressure extended northeastward to Lake Superior, where number vii was first located. It passed directly eastward to the Saint Lawrence Valley, attended by light snows in northern New England and the Lake region, but caused no marked change in the weather conditions over other sections of the United States.

VIII and IX.—These disturbances, although widely separated, occupied the northern and southern extremities of an extended barometric trough which moved eastward from the Rocky Mountains. The northerly disturbance was first observed north of Montana on the 12th. It moved toward the Lake region, reaching Lake Superior on the afternoon of the 13th, while the southern storm was central over Arkansas. During the succeeding twenty-four hours these depressions moved directly towards the upper Saint Lawrence valley, where they united on the afternoon of the 14th. The southerly disturbance was much more intense, and was attended by severe local storms as it passed over the central valleys, the rainfall being very heavy in the lower Mississippi valley and its tributaries. This storm also increased in energy after the union of the two disturbances, the course being to the northeast in the direction of the Saint Lawrence Valley. Strong westerly gales prevailed north of Hatteras, N. C., during the passage of this storm over the middle Atlantic and New England states, and they continued on the Atlantic coast until the 16th after the centre of disturbance had passed beyond Nova Scotia.

X and XI.—From the 14th to the 16th this disturbance remained almost stationary on the north Pacific coast, and although there was apparently a slow southerly movement the centre of disturbance could only be approximately located. The depression extended eastward on the 14th and 15th, but was apparently forced to the westward by the advance of an area of high pressure over Montana and the Dakotas, the secondary disturbances which had formed in the Rocky Mountain regions on the 15th filling up, owing to the advance of the area of high pressure. On the afternoon of the 16th this storm was clearly defined as central in northern Oregon, while the trough of low pressure which extended southeastward to Texas and thence northeastward to the upper lake region around the area of high pressure contained secondary disturbances central over Iowa and Kansas. The telegraphic reports of the 17th show an easterly movement of the principal secondary disturbance to the Lake region, attended by light rains, also a feeble depression over the central plateau region, and abnormally low pressure on the north Pacific coast. The depression over the plateau region became more clearly defined during the 18th, and advanced eastward and covered the central and eastern slopes of the Rocky Mountains on the morning of the 19th, after which the movement to the northeast over the central valleys and lower lake region was rapid, owing to the advance of a cold wave from the Northwest. The centre of disturbance reached the region of Lake Huron on the morning of the 20th, from which region it passed directly eastward to southern Nova Scotia, where the minimum pressure of the month, 28.92, was observed at Halifax, N. S., when the centre was near that station on the afternoon of the 20th. The gales attending this storm were unusually severe on the New England coast. This storm apparently moved northward from Halifax, N. S., the barometer at Anticosti, Gulf of Saint Lawrence, falling from 29.36 to 28.98 from 8 p. m. of the 20th to 8 a. m. of the 21st, the current velocity at that station being forty miles from the northwest, while at the same report the station at Sydney, C. B. I., reported 29.26, wind twenty-two miles southwest, maximum velocity forty miles.

XII.—Was an extended area of low pressure which appeared

on the northern California coast on the 20th, and moved southeastward over the plateau and Rocky Mountain regions during the 21st and 22d, reaching the lower Rio Grande valley on the morning of the 23d, unattended by any unusual disturbance, although it was preceded by high southerly winds on the Texas coast when central in the upper Rio Grande valley.

XIII and XIV.—During the 22d the pressure was unusually low along the entire northern border of the United States from the Rocky Mountains eastward to the lower Saint Lawrence valley. On the morning of the 23d this disturbance was apparently central far to the north of Minnesota. It moved to the southeastward over Lake Superior during the succeeding twenty-four hours, reaching southern Michigan on the afternoon of the 24th, after which it disappeared, owing to the formation of an extended low area central over Texas and the advance of a cold wave from the Northwest. Although chart i indicates that low area traced as number xiv developed over Texas on the 24th, it may have originated in the central Rocky Mountain region within the trough of low pressure which bounded the area of high pressure advancing from the north. With the advance southward of the cold wave over the eastern slope of the Rocky Mountains during the 25th this disturbance moved rapidly to the northeast, the pressure increasing at the centre of disturbance during the easterly movement. General rains occurred throughout the greater portion of the United States east of the Rocky Mountains during the passage of this storm, except in the northwest quadrant where the precipitation was in the form of snow.

XV.—The southerly movement of the cold wave over the Northwest and central valleys during the 24th and 25th apparently forced this disturbance from Colorado westward to Utah, after which it moved southeastward over the Rio Grande Valley and around the area of high pressure, increasing greatly in intensity after reaching the lower Mississippi valley, from which region it moved rapidly northeastward to Lake Erie, followed by the most decided cold wave of the month. This disturbance was central north of Lake Huron at the close of the month.

TABLE I.

Barometer.	First observed.			Last observed.		Duration.	Velocity per hour.	Maximum abnormal changes in pressure in twelve hours, with maximum abnormal changes in temperature and maximum wind velocities in connection therewith.									
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.			Rise.	Station.	Date.	Fall.	Station.	Date.	Miles per hour.	Direction.	Station.	Date
High areas.		°	°	°	°	Days.	Miles.	Inch.			°						
I	1	48	82	46	59	1·5	41	.68	Rockliffe, Ont	1	32	Chatham, N. B	1	44	w.	Montreal, Quebec	1
II	2	54	112	50	73	2·0	40	.82	Port Arthur, Ont	3	40	Bismarck, N. Dak	2	42	w.	Northfield, Vt	4
III	4	56	110	45	65	3·0	34	1·04	do	5	44	Fort Buford, N. Dak	4	72	nw.	Fort Buford, N. Dak	4
IV	5	38	127	44	72	5·5	31	.78	Winnipeg, Man	7	28	Fort Sully, S. Dak	7	64	nw.	Bismarck, N. Dak	7
V	10	48	127	38	72	3·5	40	.64	Denver, Colo	10	25	Cheyenne, Wyo	10	60	n.	Fort Elliott, Tex	11
VI	13	43	126	33	97	2·5	33	.42	Medicine Hat, N. W. T / Fort Sill, Ind. T	13 / 14	33	Saint Vincent, Minn	13	48	nw.	Winnemucca, Nev	13
VII	15	52	88	35	72	1·5	44	.62	Kingston, Ont	15	40	Quebec, Quebec	15	46	nw.	Block Island, R. I	16
VIII	15	55	108	32	79	7·5	14	.58	Chicago, Ill	20	38	Fort Custer, Mont	15	52	nw.	do	21
IX	23	54	115	39	105	5·0	15	.58	Brownsville, Tex	28	39	San Antonio, Tex	27	72?	n.	Rio Grande City, Tex	28
IX a	26	47	118	40	110	2·0	17	.48	Montrose, Colo	27	23	Santa Fé, N. Mex	27	34	sw.	Ft. Assinniboine, Mont	28
Mean	....	49	111	40	80	3·4	31	.66	.....	....	34	.....	....	53	.....	.....	....
Low areas.								Fall.			Rise.						
I	1	48	125	57	61	2·5	55	.70	Sydney, C. B. I	3	36	Bismarck, N. Dak	1	68	s.	Fort Canby, Wash	1
II	3	55	125	47	57	2·5	58	.98	Father Point, Quebec	5	29	Minnedosa, Man	3	72	s.	do	3
III	5	36	112	32	83	2·5	31	.24	Santa Fé, N. Mex	6	8	Fort Elliott, Tex	6	44	s. / nw.	Pensacola, Fla / El Paso, Tex	8 / 6
IV	6	52	109	49	61	2·5	45	1·20	Anticosti Island, G. of S. L	8	30	Ft. Assinniboine, Mont	6	52	s.	Sandy Hook, N. J	8
V	7	49	124	46	92	2·0	37	.76	Swift Current, N. W. T	8	25	Denver, Colo	8	52	s.	Fort Canby, Wash	7
VI	9	50	126	30	101	2·0	58	.34	Qu'Appelle, N. W. T / Huron, S. Dak	9 / 10	27	Brownsville, Tex	10	40	s. / sw.	Dodge City, Kans / Fort Elliott, Tex	10
VII	11	48	87	48	64	1·5	35	.52	Quebec, Quebec / Montreal, Quebec	12	25	Montreal, Quebec	12	36	s.	Buffalo, N. Y	12
VIII	12	54	109	45	75	2·5	31	.72	Minnedosa, Man	12	19	Moorhead, Minn	12	42	sw.	Ft. Assinniboine, Mont	12
IX	13	32	95	49	66	2·0	45	.66	Chatham, N. B	15	20	Norfolk, Va	14	48	s. / w.	Atlantic City, N. J / Father Point, Quebec	14 / 15
X	10	51	125	49	60	7·0	26	1·30	Halifax, N. S	20	31	Halifax, N. S	20	56	nw.	Sandy Hook, N. J	20
XI	16	39	100	42	67	3·0	26	.28	Boston, Mass	18	22	Parry Sound, Ont	16	48	nw. / n.	Quebec, Quebec / Montreal, Quebec	18
XII	20	40	123	33	103	2·5	23	.30	Memphis, Tenn / Cairo, Ill	22	20	Abilene, Tex	22	44	w.	Pueblo, Colo	22
XIII	23	52	96	45	85	1·5	20	.58	Swift Current, N. W. T	22	21	Moorhead, Minn	22	36	sw.	Ft. Assinniboine, Mont	23
XIV	24	33	100	43	67	2·5	36	.24	Atlantic City, N. J	25	18	Washington City / Fort Sill, Ind. T	25 / 24	40	n.	Green Bay, Wis	25
XV	24	42	107	50	75	4·5	33	.42	Saugeen, Ont	28	20	Minnedosa, Man	27	52	sw.	Fort Stanton, N. Mex	26
Mean	....	45	111	44	74	2·7	37	.62	.....	....	23	.....	....	49	.....	.....	....

NORTH ATLANTIC STORMS FOR FEBRUARY, 1890 (pressure in inches and millimetres; wind-force by Beaufort scale).

The paths of the depressions that appeared over the north Atlantic Ocean during February, 1890, are shown on chart i. These paths have been determined from international simultaneous observations by captains of ocean steamships and sailing vessels received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

Eight depressions have been traced for February, 1890, the average number traced for the corresponding month of the last seven years being ten. The greatest number of depressions previously traced for February was twelve, in 1887, and the least number was seven, in 1889. All of the depressions traced for the current month advanced eastward from the American continent north of the fortieth parallel; two of the depressions moved to the British Isles; four passed north of the region of observation between the fifteenth and thirty-fifth meridians; and two apparently dissipated before reaching the fortieth meridian. The average path of the depressions was more northerly than the usual February tracks of storms over the north Atlantic, and no severe storms were reported south of the fortieth parallel.

The movements of areas of high pressure over the north Atlantic during the month were as follows: On the 1st the

pressure was high from coast to coast. On the 2d an area of high pressure was central over the Canadian Maritime Provinces, whence it moved eastward, reaching the British Isles on the 5th. On the 7th an area of high pressure was central over the Canadian Maritime Provinces, whence it moved eastward over the Grand Banks by the 8th, to mid-ocean by the 9th, and thence apparently passed eastward to the British Isles by the 10th. On the 9th an area of high pressure was central over the middle Atlantic coast, whence it extended eastward south of Nova Scotia and Newfoundland during the 10th and 11th, and by the 14th had moved eastward to the Azores. From the 13th to 15th an area of high pressure moved from the middle Atlantic coast to the Azores. On the 16th an area of high pressure extended from the lower lake region to the south Atlantic coast, whence it contracted to the southward and on the 17th extended from the south Atlantic coast to the Bermudas, after which it moved eastward to the Azores by the 19th. On the 21st an area of high pressure was central over the south Atlantic states and Florida, where it remained nearly stationary during that and the following date, after which it moved slowly eastward, and on the 24th the pressure was high from the Bahamas to Newfoundland; contracting northward the area of high pressure apparently advanced to mid-ocean by the 26th, and reached the British Isles by the 27th. On the 27th an area of high pressure was central on the middle Atlantic coast, whence it moved northeastward over the Canadian Maritime Provinces by the 28th.

Compared with the corresponding month of the last seven years the storms reported over the north Atlantic ocean during February, 1890, were deficient in number and energy. Over the western portion of the ocean the storm periods were from the 4th to 6th, 8th, 9th, 13th, 15th to 22d, and 26th to 28th, the severest storms of the month occurring over and near Newfoundland from the 20th to 22d, when strong to whole gales were reported in that region. Over mid-ocean stormy weather prevailed on the 5th, 7th to 14th, 18th to 22d, 25th. and 27th, the severest storms occurring on the 11th, 13th, 14th, and 18th to 22d, when strong to whole gales were reported, and where on the 20th gales of hurricane force were reported, Over the eastern part of the ocean generally settled weather and high barometric pressure prevailed during the first decade of the month, and from the 21st to 28th, inclusive, while during the second decade of the month generally stormy weather prevailed in that region, strong to whole gales being reported on the 11th, and fresh to strong gales on the 12th and 15th to 17th. The captain of the s. s. "Allemania" reports that a severe "norther" prevailed at Vera Cruz, Mexico, on the 28th, commencing at 10 a. m. The wind increased suddenly to force 10 (Beaufort scale); the sea in the harbor rose rapidly, sweeping over the custom house wharf; and two lighters were capsized and totally wrecked. The gale blew with the same strength for thirty hours and then decreased and shifted to westward. The barometer began to fall on the 25th, when the "Allemania" was at anchor in Progresso Road, and continued to fall during the voyage to Vera Cruz, with fine weather. On the 28th, at noon, the barometer read 29.56 (751), and at 4 p. m. the lowest reading, 29.54 (750), was noted, after which the pressure increased rapidly.

The following are brief descriptions of the depressions traced for February, 1890:

1.—This depression was a continuation of low area i, which moved eastward over the Saint Lawrence Valley and the Gulf of Saint Lawrence during the 3d. On the morning of the 4th the depression was central north of Newfoundland, with pressure below 29.40 (747), whence it moved eastward to the thirty-fifth meridian by the 5th, and thence passed northward, beyond the region of observation, along the western margin of an area of high pressure which occupied the British Isles and the adjacent ocean to the twentieth meridian.

2.—This depression was the continuation of low area ii, which was central over the Canadian Maritime Provinces on the 5th, with pressure below 29.10 (739). By the morning of the 6th the storm-centre had passed eastward over Newfoundland, attended by fresh to strong gales, and by the 7th had advanced east northeast to the thirty-fifth meridian, with an apparent decrease in energy. By the 8th the centre of depression had passed eastward to the thirtieth meridian, its eastward movement having been retarded by an area of high pressure to the eastward, and by the 9th had moved south of east to the twentieth meridian, along the southwest margin of an area of high pressure which was apparently central over the North Sea. By the 10th the depression had apparently recurved to the north and west under the influence of the area of high pressure to the eastward and a depression advancing over mid-ocean from the westward, with which latter named area it probably united.

3.—This depression was a continuation of low area iv, which advanced over the Saint Lawrence Valley and the Gulf of Saint Lawrence during the 8th. On the morning of the 9th the depression was central south of Newfoundland, with pressure below 29.30 (744) and strong to whole gales, whence it passed north of east to about the thirty-fifth meridian by the 10th, and thence following an east-northeast course disappeared over the British Isles after the 12th, attended throughout by gales of considerable force.

4.—This depression was a continuation of low area vii, which advanced over the Saint Lawrence Valley and the Gulf of Saint Lawrence during the 12th. On the morning of the 13th the depression was central south of Newfoundland, with pressure below 29.50 (749) and moderate to fresh gales, whence it moved rapidly east-northeast to the thirty-fifth meridian by the 14th, attended by fresh to strong gales and a slight decrease in central pressure, and thence moved eastward to about the fifteenth meridian by the 15th. During the 16th and 17th the depression apparently remained central southwest of the British Isles, after which it probably recurved to the north and west and united with a depression which was advancing eastward over mid-ocean.

5.—This depression was a continuation of low area ix, which was central over the Canadian Maritime Provinces on the 15th, with central pressure below 29.10 (739), whence it moved to northern Newfoundland by the morning of the 16th, with pressure below 29.40 (747) and fresh gales. By the 19th the depression had moved eastward to about the twentieth meridian, attended by fresh to strong gales, after which it passed northward beyond the region of observation.

6.—This depression was a continuation of low area xi, which was central over the middle Atlantic states on the evening of the 18th, whence it passed to the south of Nova Scotia by the morning of the 19th, with pressure below 29.70 (754) and fresh to strong gales. By the morning of the 20th the depression had advanced to the east edge of the Banks of Newfoundland, attended by pressure falling below 29.20 (742) and gales attaining hurricane force. By the 21st the centre of depression had moved northeast beyond the region of observation.

7.—This depression was a continuation of low area x, which moved eastward over New England during the 20th, whence it passed northeastward over Newfoundland during the 21st, with pressure below 29.20 (742) and gales attaining hurricane force, and by the 22d had moved to the north of the Grand Banks, attended by severe gales west of the thirty-fifth parallel, after which it apparently disappeared by an increase of pressure on the west margin of an area of high pressure which occupied the eastern half of the ocean.

8.—This depression was a continuation of low area xiv, which was central over New England on the morning of the 26th, and thence moved rapidly eastward over the Grand Banks by the 27th. The advance of this depression east of the fortieth parallel was apparently opposed by an area of high pressure which occupied the ocean east of the thirty-fifth meridian, and moderate to fresh gales prevailed over and near the Grand Banks during the 27th and 28th, on which dates the storm was central in that region.

OCEAN ICE IN FEBRUARY.

The following table shows the southern and eastern limits of the region within which icebergs or field ice were reported for February, during the last eight years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
	° ′	° ′		° ′	° ′
February, 1883	42 01	52 46	February, 1883	46 19	45 44
February, 1884	42 00	50 00	February, 1884	46 50	43 45
February, 1885	41 50	51 12	February, 1885	47 52	42 00
February, 1886	46 10	47 15	February, 1886	48 00	44 47
February, 1887	40 00	48 00	February, 1887	46 26	41 50
February, 1888	44 59	45 08	February, 1888	44 59	45 08
February, 1889	45 35	48 00	February, 1889	45 35	48 00
February, 1890	41 12	50 12	February, 1890	44 30	35 30

Ice was reported about two degrees south and about nine degrees east of the average southern and eastern limits of Arctic ice for February. The southernmost ice reported consisted of large icebergs and a quantity of field ice, observed on the 15th in the position given, and in the easternmost position given in the table twenty icebergs were reported on the 14th. For February of preceding years Arctic ice has been reported farther south than the southernmost position reported for the current month in but one year only, 1887, and the easternmost ice reported for the current month was about six degrees farther east than the easternmost position in which ice has been reported for February of preceding years. In February, 1888 and 1889, no icebergs were reported near Newfoundland and the Grand Banks. In each of these years field ice was reported over or near the Grand Banks, and in 1889 Gulf ice was encountered south of Newfoundland.

While the aggregate quantity of ice noted for the current month probably exceeded the amount reported for any February of preceding years, it was not largely in excess of the quantity reported for February, 1883, 1884, 1885, and 1887, and Gulf ice in the tracks of vessels between Newfoundland and Nova Scotia is not an unusual feature of the month. The southward movement of ice from north of Newfoundland commonly commences in February, and the ice record for the current month is therefore remarkable only when considered in connection with the enormous excess during the preceding winter months, and ends a winter season during which the movement of Arctic ice has been unparalleled during the last eight years.

The following positions of icebergs and field ice reported for February, 1890, are shown on chart i by ruled shading:

1st.—N. 43° 24′, W. 48° 35′, one very large and two small bergs and several small pieces of ice; N. 46° 05′, W. 47° to N. 44° 18′, W. 48° 40′, heavy field ice, with bergs of enormous size; N. 47° 50′, W. 48° 05′, berg; N. 44° 52′, W. 49° 47′, berg; N. 46° 42′, W. 46° 54′ to N. 43° 47′, W. 48° 52′, dense field ice and several large bergs; steamed along the edge of field ice for one hundred and ninety miles; N. 44° 56′, W. 45° 05′, two bergs and several small pieces of ice to the westward; N. 43° 14′, W. 48° 40′, large berg; N. 49°, W. 49° 19′, large berg and field ice.

1st to 3d.—N. 47° 44′, W. 47° 03′ to N. 44° 14′, W. 48° 48′, large ice field, containing several large bergs.

2d.—N. 44° 50′, W. 48° 05′ to N. 44° 48′, W. 48° 10′, heavy field ice and one berg; N. 44° 57′, W. 47° 24′, berg fifty feet high and two hundred feet long, and another one hundred and fifty high; also small bergs and heavy field ice; N. 42° 55′, W. 48° 08′, field of ice about five miles in extent; N. 45° 10′, W. 48° 11′, twenty bergs, ranging in size from sixty to two hundred feet high, and at 5 p. m. saw a schooner fast in the ice, with all sails set; N. 43° 25′, W. 48° 58′ to N. 43° 22′, W. 49° 05′, large field of floe ice five miles in extent; N. 43° 45′, W. 48° 35′, very large berg, two hundred and forty-five feet high; N. 44° 10′, W. 48° 45′, large berg, about one hundred and fifty feet high; N. 43° 49′, W. 49° 28′, high berg.

3d.—N. 44°, W. 48° to W. 49°, eighteen small bergs in dense field of ice; N. 44° 52′, W. 46° 45′, eight large bergs; N. 45°, W. 47° to N. 43°, W. 49°, three large bergs, and sailed southward along the edge of field ice for twelve hours; N. 43° 17′, W. 49° 35′, berg with large round base; N. 45° 16′, W. 47° 17′, large double berg; N. 43° 30′, W. 50° 20′, densely packed field of ice for twenty miles; 9 p. m., berg one-fourth of a mile long and three hundred feet high.

4th.—N. 42° 59′, W. 49° 33′, berg; N. 45° 17′, W. 49° 28′, large berg; N. 46° 55′, W. 46° 45′, field of ice; N. 45° 48′, W. 47°, field ice and small berg; N. 45° 52′, W. 48° 40′, medium-sized berg; N. 44° 29′, W. 47° 49′, field ice for twelve hours; N. 43° 53′, W. 48° 13′, bergs and vast fields of drift ice; N. 42° 55′, W. 48° 10′, field of ice several miles in extent; N. 45°, W. 46°, berg four hundred feet long and forty feet high, also a great quantity of smaller bergs and field ice; N. 44°, W. 49° 23′, large quantities of field ice; N. 45° 40′, W. 47° 18′, berg one hundred and eighty feet high; N. 45° 20′, W. 48° 13′, field ice; skirted ice for one hundred and seventy-four miles; southern edge in N. 43° 26′, W. 49° 04′; there were several small bergs in the ice field, and large one one hundred and fifty feet high in N. 44° 08′, W. 48° 13′; N. 43° 18′, W. 49° 44′ to N. 43° 15′, W. 49° 26′, large quantities of drift ice.

5th.—N. 43°, W. 49° 55′, large berg; steamer "Miranda" sustained damage from heavy ice from Saint John's to Halifax; N. 44° 35′, W. 48° 40′ to N. 43° 50′, W. 48° 56′, three very large bergs and ice field; N. 46° 59′, W. 43° 49′ to N. 45° 30′, W. 48° 20′, large berg and field ice for sixty-five miles; N. 44° 05′, W. 48° 30′, nine bergs and field ice; N. 43° 52′, W. 48° 33′, two bergs; N. 43° 22′, W. 49° 25′, field ice; N. 43° 26′, W. 49°, packed field ice; N. 46° 25′, W. 46° 33′ to N. 44° 50′, W. 48° 52′, fields of ice and fifty bergs; N. 42° 53′, W. 50° 02′, large berg and numerous patches of field ice for a distance of twenty miles; N. 45° 15′, W. 48° 14′, in ice pack for thirty hours, damage to vessel; N. 46° 06′, W. 46° 46′ to N. 43° 45′, W. 49° 39′, heavy packed ice and six very large bergs.

5–6th.—N. 45° 50′, W. 47° 40′ to N. 45°, W. 48° 50′, immense patches of field ice.

6th.—N. 43° 09′, W. 49° 04′ to N. 42° 55′, W. 49° 38′, for many miles pieces of ice not more than ten or twelve feet square and one or two feet above water; N. 44° 12′, W. 50° 30′, berg; N. 44° 05′, W. 51°, ice fields; N. 45° 40′, W. 47° 44′ to N. 44° 24′, W. 48° 52′, field ice; three bergs within two miles of each other at noon in N. 44° 54′, W. 48° 29′; shortly afterwards passed several bergs; N. 42° 50′, W. 49° to N. 42° 50′, W. 48° 20′, heavy pack of field ice; N. 44° 12′, W. 48° 10′ to N. 44° 05′, W. 48° 40′, large berg.

7th.—N. 43° 02′, W. 49° 31′ to N. 43°, W. 50° 04′, field ice; N. 43° 07′, W. 49° 42′, large berg; N. 45° 10′, W. 48° 26′ to N. 43° 55′, W. 49°, field ice; N. 43° 29′, W. 48° 50′, field ice; N. 43° 05′, W. 49° 19′, one berg; N. 42° 56′, W. 50°, one berg; N. 44°, W. 48° 48′, berg.

8th.—N. 44° 30′, W. 48° 40′ to N. 44° 25′, W. 48° 43′, two medium and two small bergs; N. 44° 21′, W. 48° 44′, four bergs, two medium and two small; N. 43° 55′, W. 48° 40′, two bergs, one very large, visible ten miles; N. 43° 09′, W. 48° 47′, small pieces of ice; N. 43°, W. 49° 15′, large berg; N. 42° 55′, W. 50° 11′, very large berg; N. 43° 25′, W. 48° 39′ to N. 43° 24′, W. 49° 19′, small berg and field ice; N. 42° 55′, W. 49° 15′, very large berg; N. 47°, W. 47°, field ice north and south; was in the ice for thirty-six hours, during which time saw one hundred bergs; N. 44° 40′, W. 47° 39′ to N. 44° 42′, W. 48° 50′, large berg and field ice; N. 43° 30′, W. 49°, bergs and field ice.

9th.—N. 42° 48′, W. 50° 18′, large berg and quantity of field ice; N. 46° 30′, W. 47° to N. 42° 50′, W. 48°, field ice and twenty bergs; N. 44° 48′, W. 49° 51′, large quantities of field ice and three large bergs; N. 44° 02′, W. 48° 17′, a berg; N. 43° 58′, W. 48° 35′, a large conical berg; N. 45° 43′, W. 46° 29′, large berg.

10th.—N. 44° 41′, W. 46° 06′, very large berg; N. 44° 31′, W. 48° 29′, large berg; N. 42° 58′, W. 48° 48′, an enormous berg; N. 44° 39′, W. 48° 32′, numerous bergs.

11th.—N. 44° 39′, W. 45° 42′, large berg; N. 43° 48′, W. 48° 17′, large berg; N. 42° 25′, W. 51° 01′, large berg; N. 42° 54′, W. 48° 58′, very large berg; N. 47° 39′, W. 47° 47′, small quantity of broken field ice and two small bergs.

11–12th.—N. 45°, W. 48° to N. 43°, W. 49°, an immense field of ice and twenty bergs.

12th.—N. 43° 14′, W. 48° 40′, high berg; N. 42° 52′, W. 48° 44′, large berg; N. 46° 02′, W. 45° 40′, small berg; N. 44° 30′, W. 48° 36′, very large berg and field ice; N. 44°, W. 49° 25′, field ice; N. 43° 50′, W. 49° 30′, field ice; N. 44° 36′, W. 46° 52′, three bergs; N. 44° 26′, W. 47° 30′, seventeen bergs; N. 44° 19′, W. 48° 02′ to N. 44° 10′, W. 49° 19′, six bergs and ice field; N. 43° 07′, W. 41° 55′, two bergs.

13th.—N. 45° 04′, W. 45° 32′, thirty-five bergs between 6.30 a. m. and 1 p. m.; N. 43° 49′, W. 47° 50′, berg about 180 feet high and 1,000 feet long; N. 43° 33′, W. 48° 17′ to N. 43° 21′, W. 48° 39′, fields of thin broken ice; N. 45° 11′, W. 46° 58′ to N. 44° 43′, W. 48° 54′, thirty-five bergs and small pieces; N. 45°, W. 45°, two large bergs; N. 46° 10′, W. 45° 20′ to N. 44° 40′, W. 49°, many large and small bergs, heavy pack and field ice; N. 43° 20′, W. 48° 46′, berg.

13–14th.—N. 43° 45′, W. 48° 26′ to N. 43° 22′, W. 49° 12′, three large bergs and field ice to the north.

14th.—N. 45° 29′, W. 44° 39′, two bergs; N. 45° 07′, W. 45° 12′, small berg; N. 44° 30′, W. 35° 30′, twenty bergs; N. 43° 38′, W. 46°, large berg; N. 44° 10′, W. 48° 20′, two bergs.

14–15th.—N. 45° 20′, W. 44° 50′ to N. 43° 08′, W. 49°, 12′, several bergs, and on extreme southern edge of the Grand Banks passed field ice for three and one-half hours.

15th.—N. 43° 11′, W. 49° 18′, berg and small floe of ice; N. 43°, W. 49° to N. 42° 58′, W. 49° 30′, two bergs and field ice; N. 47° 36′, W. 41° 53′, small berg; N. 41° 12′, W. 50° 12′, two large bergs and field ice; N. 43°, W. 48° 30′, two bergs.

16th.—N. 46°, W. 45° 50′, four bergs and patches of field ice; N. 45° 40′, W. 46° 07′ to N. 45° 04′, W. 48°, large and small bergs, and from 3 p. m. to 5.30 p. m., several large ice fields; N. 44° 46′, W. 43° 49′, large berg.

17th.—N. 43° 08′, W. 48° 43′ to N. 42° 54′, W. 49° 18′, two bergs; N. 42° 24′, W. 42° 45′, two bergs; N. 47°, W. 44°, berg.

19th.—N. 45° 07′, W. 41° 55′, two bergs 30 feet high; N. 43°, W. 41° 30′, four large bergs; N. 47° 20′, W. 44° 30′, small berg; N. 44° 56′, W. 42° 13′, small bergs.

20th.—N. 45° 40′, W. 48°, several large bergs.

22d.—N. 44° 40′, W. 48° 20′, large and small bergs; and in N. 44° 37′, W. 48° 20′ to N. 44° 18′, W. 49° 22′, field ice; N. 44° 24′, W. 44° 05′, berg with two peaks about 60 feet high; N. 46° 30′, W. 46° 44′, vast ice floe; steamed through it for 18 hours, during which sighted 30 bergs, several very large.

23d.—N. 43° 20′, W. 48° 40′, field-ice for fifty miles; N. 43° 15′, W. 52° 05′, field-ice; N. 44° 11′, W. 48° 13′ to N. 44° 51′, W. 50° 06′, medium sized berg and field ice; N. 42° 52′, W. 49° 01′, two bergs; N. 42° 45′, W. 50°, ice field and large berg.

24th.—N. 4.° 37′, W. 48° 31′, large berg; N. 43° 33′, W. 49° 01′, three bergs and patches of field ice; N. 42° 47′, W. 49° 23′, small berg; N. 44° 23′, W. 48° 45′, quantity of ice; N. 45° 16′, W. 45° 10′, two bergs.

25th.—N. 42° 35′, W. 49° 40′, broken field ice and two bergs; N. 42° 20′, W. 50° 35′, large ice floe, large bergs.

27th.—N. 43° 19′, W. 48° 12′, small berg and field ice; N. 42° 33′, W. 50°, two moderate sized bergs; N. 43° 45′, W. 48° 17′ to N. 42° 42′, W. 49° 30′, detached ice, one small berg and two large ones; N. 43° 19′, W. 48° 12′ to N. 42° 32′, W. 50° 18′, field ice, one small and two moderate sized bergs; N. 43′ 05′, W. 48° 40′ to N. 43° 05′, W. 48° 50′, small bergs, large quantities of field ice; N. 45° 16′, W. 45° 10′ to N. 45°, W. 45° 50′, berg about one hundred and thirty feet high, and small berg; N. 43°, W. 49° 10′ to N. 42°, W. 50°, several bergs, field ice.

28th.—N. 43° 17′, W. 48° 12′ to N. 43° 32′, W. 50° 18′, large quantities of detatched field ice and two bergs; N. 43° 09′, W. 49° 08′ to N. 42° 40′, W. 50° 20′, field ice and two bergs four hundred feet long and sixty feet high; N. 42° 36′, W. 50° 20′, field ice; N. 45° 50′, W. 47° 40′, heavy pack ice; N. 45° 14′, W. 47° 22′, berg one hundred feet high and two hundred feet long; N. 44° 35′, W. 48° 30′, packed field ice.

28th–March 2d.—Light slab ice from Halifax to N. 44° 40′, W. 60°; N. 44° 45′, W. 59° 10′ to N. 45° 08′, W. 57° 43′, heavy Gulf field ice; N. 45° 35′, W. 55° 15′, rotten field ice.

FOG IN FEBRUARY.

The limits of fog-belts west of the fortieth meridian are shown on chart i by dotted shading. In the vicinity of the Banks of Newfoundland fog was reported on thirteen dates; between the fifty-fifth and sixty-fifth meridians on six dates; and west of the sixty-fifth meridian on five dates. Compared with the corresponding month of the last two years the dates of occurrence of fog near the Grand Banks were two less than the average; between the fifty-fifth and sixty-fifth meridians the same as the average; and west of the sixty-fifth meridian two less than the average. In each instance fog was reported in the regions referred to attending the approach or passage to the northward of low pressure storms. On the 25th dense fog prevailed along the Atlantic coast from Portland, Me., to Norfolk, Va., attending the advance eastward of an area of low pressure to the lower lake region. The fog on Long Island Sound was so dense as to seriously interrupt navigation, and all Sound steamers were twelve to eighteen hours late at New London, Conn. On the 26th dense fog prevailed on the New England coast south of Boston, Mass., attending the approach and passage over New England and the ocean to the eastward of a low pressure storm. On the 28th dense fog prevailed along the Atlantic coast from southern New England to Norfolk, Va., with the passage of a low pressure storm over the lower lake region and the Saint Lawrence Valley. Dense fog prevailed at New London, Conn., on the 3d, attending the passage of an area of low pressure over the Saint Lawrence Valley, and a number of vessels took refuge in that port on account of the dense fog.

The following are limits of fog-areas on the north Atlantic Ocean, west of the fortieth meridian, for February, 1890, as reported by shipmasters:

Date.	Entered.		Cleared.		Date.	Entered.		Cleared.	
	Lat. N.	Lon. W.	Lat. N.	Lon. W.		Lat. N.	Lon. W.	Lat. N.	Lon. W.
	° ′	° ′	° ′	° ′		° ′	° ′	° ′	° ′
1	43 28	49 03	43 24	49 25	20	41 53	59 08	41 47	59 38
1	42 26	53 39	42 50	49 10	21–22	44 20	38 00	43 15	45 01
3	41 10	65 40	41 13	65 20	25	40 13	63 05	40 05	64 30
3	40 36	68 30	40 32	70 40	25	42 24	61 38	40 20	72 09
3	43 52	50 13	43 50	50 48	25	40 41	70 09	Off Sandy Hook.	
4	43 47	52 42	43 46	53 12	25	35 52	74 52	41 06	71 25
4	44 13	48 35	43 01	50 47	26	39 57	66 00	39 30	71 20
4	45 40	46 30	45 00	47 20	26	42 30	51 15	42 02	53 19
5	43 04	61 00	42 58	61 59	26–27	42 40	48 20	41 38	54 30
5	41 41	49 43	41 45	49 23	26–27	41 02	63 04	40 56	64 09
6	42 30	59 50	43 51	60 39	26–27	45 10	44 20	43 15	48 40
6	43 03	50 05	43 00	51 10	27	41 40	48 42	41 14	50 59
6	42 50	49 00	42 50	48 20	27	44 58	45 26	42 42	50 05
8	42 30	69 25	Off Minots.		27	43 47	47 44	43 36	49 54
13	43 38	51 10	43 34	51 31	27–28	43 56	47 43	42 11	50 45
16	45 17	47 38	44 50	48 59	28	38 55	71 54	38 13	73 26
19	42 48	51 17	42 46	51 30					

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

The distribution of mean temperature over the United States and Canada for February, 1890, is exhibited on chart ii by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Signal Service. The figures opposite the names of the geographical dis-

tricts in the columns for mean temperature and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Signal Service represents the mean of the maximum and minimum temperatures.

For February, 1890, the mean temperature was highest over southern Florida, where the mean values rose to 73°.3 at Key West. In Florida south of the thirtieth parallel, in extreme southern Louisiana, and in the lower Rio Grande valley the mean readings were above 65°, and south of a line traced irregularly south of west from the middle Virginia coast to extreme western Texas, and south and west of a line traced from south-central Arizona northwestward to a point on the Pacific coast just south of San Francisco, Cal., the mean temperature was above 50°. The mean temperature was lowest in Manitoba, where it fell below —5°, the lowest mean reading, —9°, being noted at Minnedosa. In extreme northwestern Minnesota, northern North Dakota, and extreme northeastern Montana the mean readings were below zero. North of a line traced from the west-central coast of the Gulf of Saint Lawrence westward to central South Dakota, and thence west-northwest to Montana, and at the more elevated stations in west-central Colorado the mean temperature fell to, or below, 15°. A line indicating the southern limit of monthly mean temperature of 20° is traced somewhat to the southward, and follows the same general direction, of the line of 15° referred to, and the mean temperature also fell to 20° in east-central Nevada. North of a line traced from the coast of northern Massachusetts westward to central lower Michigan, thence south of west to north-central Colorado, thence southward to north-central New Mexico, and generally over the middle and northern plateau the mean temperature was below 30°. On the Pacific coast the mean temperature varied from 55° in extreme southern California to 35° in extreme northwestern Washington.

The mean temperature for February was above the normal, except from the Dakotas westward to the Pacific coast, and thence southward over Washington, Oregon, California, and western Nevada to extreme southern California, where at San Diego the month was slightly warmer than usual. It was also slightly below the normal in central Arizona. In areas east of the Rocky Mountains the departures above the normal temperature varied from 5° to 9°, and in north-central Montana and the British Possessions to the northward the departures below the normal temperature were more than 10°.

The following are some of the most marked departures from the normal at the older established Signal Service stations:

Above normal.	°	Below normal.	°
Hatteras, N. C	9.4	Fort Assinniboine, Mont	11.2
Pittsburgh, Pa	8.0	Spokane Falls, Wash	4.6
Chattanooga, Tenn	8.0	Fort Canby, Wash	3.2
Milwaukee, Wis	7.0	Red Bluff, Cal	4.0
Galveston, Tex	5.7	San Carlos, Aris	1.6

In the Atlantic coast and Gulf states and in the Ohio Valley and Tennessee, the current month was the warmest February ever reported by regular stations of the Signal Service. At Boston, Mass., the mean temperature for the current month was 0°.7 higher than the highest previous mean temperature for February, noted in 1877; at Block Island, R. I., 2°.5; at Lynchburgh, Va., 1°.5; at Vicksburg, Miss., 0°.8; at Shreveport, La., 0°.1; at Galveston, Tex., 0°.6; at San Antonio, Tex., 0°.1; and at Pittsburgh, Pa., 2°.2 above mean of 1882; at New Haven, Conn., 0°.3; at New London, Conn., 2°.4; at New York City, 4°.1; and at Cape Henry, Va., 4°.1 above mean of 1880; at Philadelphia, Pa., 1°.1; at Baltimore, Md., 1°.2; at Washington City, 2°.5; at Norfolk, Va., 1°.3; at Charlotte, N. C., 1°.5; at Hatteras, N. C., 2°.4; at Kitty Hawk, N. C., 3°.5; at Wilmington, N. C., 1°.9; and at Charleston, S. C., 1°.9 above mean of 1884; at Atlantic City, N. J., 3°.3 above mean of 1880 and 1882; at Augusta, Ga., 1°.5 above mean of 1883; at Savannah, Ga., 2°.5; at Jacksonville, Fla., 0°.4; at Atlanta, Ga., 2°.1; at Montgomery, Ala., 0°.5; at Fort Smith, Ark., 2°.9; at Chattanooga, Tenn., 2°.8, and at Knoxville, Tenn., 2°.2 above mean of 1887. No unprecedentedly low mean temperatures were reported at regular stations of the Signal Service for the current month.

The continued excess in temperature in the southeastern states and along a greater part of the Atlantic coast from December, 1889, to February, 1890, inclusive, while marking the winter of 1889–'90 as the warmest in the history of the Signal Service over a greater portion of the country east of the Mississippi River, was in marked contrast to the continued deficiency in temperature on the Pacific coast and in the northwestern states and territories, where the weather was cooler than usual, and the lowest December mean temperature ever reported for that station was noted at San Diego, Cal., in December, 1889; where the temperature was the lowest ever reported for January at stations in northern Nevada, northern Montana, and California in January, 1890, and where the mean temperature was below the normal in February, 1890.

DEVIATIONS FROM NORMAL TEMPERATURES.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for February for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for February, 1890; (4) the departure of the current month from the normal; (5) and the extreme monthly means for February, during the period of observation and the years of occurrence:

State and station.	County.	(1) Normal for the month of Feb.	(2) Length of record.	(3) Mean for Feb., 1890.	(4) Departure from normal.	(5) Extreme monthly mean temperature for Feb.			
						Highest.	Year.	Lowest.	Year.
Arkansas.		°	*Years*	°	°	°		°	
Lead Hill	Boone	39.3	8	44.3	+ 5.0	49.9	1882	32.2	1885
California.									
Sacramento	Sacramento	50.3	34	43.3	— 7.0	55.0	1877, '79	43.3	1890
Connecticut.									
Middletown	Middlesex	26.5	22	34.2	+ 7.7	34.5	1867	17.7	1885
Florida.									
Merritt's Island	Brevard	63.3	7	68.3	+ 5.0	69.4	1887	58.0	1889
Georgia.									
Forsyth	Monroe	51.6	16	59.6	+ 8.0	59.6	1890	44.5	1885
Illinois.									
Peoria	Peoria	29.2	34	35.7	+ 6.5	39.3	1882	15.5	1875
Riley	McHenry	22.1	34	28.5	+ 6.4	32.4	1882	4.7	1875
Indiana.									
Vevay	Switzerland	35.6	23	44.2	+ 8.6	45.5	1882	25.1	1885
Iowa.									
Cresco	Howard	15.3	18	21.0	+ 5.7	31.3	1878	1.0	1875
Monticello	Jones	21.3	37	27.3	+ 6.0	34.6	1878	7.5	1875
Logan	Harrison	23.9	16	26.5	+ 2.6	35.2	1877	12.6	1875
Kansas.									
Lawrence	Douglas	32.0	26	32.6	+ 0.6	41.6	1882	20.8	1885
Wellington	Sumner	32.0	11	35.8	+ 3.8	40.1	1882	24.6	1885
Louisiana.									
Grand Coteau	Saint Landry	58.2	7	64.5	+ 6.3	64.6	1887	52.4	1885
Maine.									
Gardiner	Kennebec	20.9	49	24.9	+ 4.0	28.7	1840	13.3	1838
Maryland.									
Cumberland	Allegany	30.9	31	40.0	+ 9.1	40.0	1890	19.4	1868
Massachusetts.									
Amherst	Hampshire	24.7	54	32.4	+ 7.7	32.4	1890	16.5	1843
Newburyport	Essex	26.3	10	31.3	+ 5.0	31.3	1890	19.3	1885
Somerset	Bristol	27.7	17	35.3	+ 7.6	35.3	1890	19.6	1885
Michigan.									
Kalamazoo	Kalamazoo	25.0	14	34.0	+ 9.0	35.0	1882	11.2	1885
Thornville	Lapeer	24.0	13	31.4	+ 7.4	34.8	1882	10.6	1885
Minnesota.									
Minneapolis	Hennepin	14.0	25	17.5	+ 3.5	29.9	1877	— 2.6	1875
Montana.									
Fort Shaw	Lewis & Clarke	25.6	20	14.2	—11.4	39.6	1877	2.4	1887
New Hampshire.									
Hanover	Grafton	18.5	53	25.4	+ 6.9	27.2	1840	10.8	1885
New Jersey.									
Moorestown	Burlington	31.1	26	39.4	+ 8.3	39.4	1890	21.6	1885
South Orange	Essex	29.4	19	37.0	+ 7.6	37.0	1890	22.8	1885
New York.									
Cooperstown	Otsego	20.9	36	29.2	+ 8.3	31.7	1857	10.5	1885
Palermo	Oswego	21.5	36	27.5	+ 6.0	27.8	1859	9.8	1885
North Carolina.									
Lenoir	Caldwell	39.7	17	49.0	+ 9.3	49.0	1890	30.3	1875
Ohio.									
N'th Lewisburgh	Champaign	30.0	58	39.4	+ 9.4	42.0	1851	19.0	*
Wauseon	Fulton	25.2	20	33.3	+ 8.1	35.4	1882	11.3	1875

Deviations from normal temperatures—Continued.

State and station.	County.	(1) Normal for the month of Feb.	(2) Length of record.	(3) Mean for Feb., 1890.	(4) Departure from normal.	(5) Extreme monthly mean temperature for Feb.			
						Highest.	Year.	Lowest.	Year.
Oregon.		°	*Years*	°	°	°		°	
Albany	Linn	40.8	11	38.7	— 2.1	47.9	1885	32.7	1887
Eola	Polk	39.9	19	37.0	— 2.9	46.5	1885	31.0	1887
Pennsylvania.									
Dyberry	Wayne	22.0	25	30.1	+ 8.1	30.1	1890	13.3	1868
Grampian Hills	Clearfield	24.4	25	33.8	+ 9.4	33.8	1890	13.7	1885
Wellsborough	Tioga	25.7	10	34.0	+ 8.3	34.0	1890	10.7	1885
South Carolina.									
Statesburgh	Sumter	49.3	9	56.6	+ 7.3	56.6	1890	41.8	1885
Tennessee.									
Austin	Wilson	42.8	21	51.4	+ 8.6	51.4	1890	32.9	1885
Milan	Gibson	39.8	6	48.2	+ 8.4	48.2	1890	33.8	1885
Texas.									
New Ulm	Austin	56.1	16	61.0	+ 4.9	62.0	1882	52.6	1883
Vermont.									
Strafford	Orange	18.0	16	22.1	+ 4.1	25.7	1877	11.0	1885
Virginia.									
Birdsnest	Northampt'n	40.8	21	50.2	+ 9.4	50.2	1890	33.9	1889
Wisconsin.									
Madison	Dane	20.6	23	26.1	+ 5.5	32.8	1878	8.1	1885
Washington.									
Fort Townsend	Jefferson	40.7	18	34.8	— 5.9	47.0	1885	31.7	1887

*1838, 1856, 1875.

The above table shows that the mean temperature for the current month was the highest mean temperature ever reported for February at the following-named stations during their respective periods of observation: Forsyth, Ga., 1°.5 above mean of 1883; Cumberland, Md., 2°.0 above mean of 1877; Amherst, Mass., 1°.0 above mean of 1857; Newburyport, Mass., 0°.8 above mean of 1880 and 1884; Somerset, Mass., 1°.8 above mean of 1884; Moorestown, N. J. (broken record), 2°.7 above mean of 1880; South Orange, N. J., 2°.7 above mean of 1877; Lenoir, N. C., 2°.5 above mean of 1887; Dyberry, Pa., 1°.0 above mean of 1867; Grampian Hills, Pa., 1°.8 above mean of 1882; Wellsborough, Pa., 1°.6 above mean of 1882; Statesburgh, S. C., 1°.5 above mean of 1884; Austin, Tenn., 0°.3 above mean of 1882; Milan, Tenn., 0°.2 above mean of 1887; and Birdsnest, Va., 2°.4 above mean of 1880. At Sacramento, Cal., the mean temperature reported for the current month was 0°.4 lower than the lowest mean temperature previously reported for February, noted in 1887.

MAXIMUM AND MINIMUM TEMPERATURES.

The highest temperature reported by a regular station of the Signal Service was 95°, at Rio Grande City, Tex., on the 24th, and the temperature rose to 90° at Micco, Fla., on the 28th. Maximum temperatures of 80° or above were reported in the eastern part of the south Atlantic and the southern part of the Gulf States, except along the immediate Atlantic and Gulf coasts where they generally fell below 80°, and the maximum values rose above 80° over a greater part of Texas, in the central and southern part of Indian Territory, and within an area extending from the lower Gila valley, Ariz., over southeastern California to the Pacific coast near Los Angeles, Cal. The lowest maximum temperature reported was 38°, at Saint Vincent, Minn., and the maximum readings were below 50° in extreme eastern Maine, and north of a line traced from northern lower Michigan westward to central Wisconsin, thence northwest to northeastern Minnesota, thence southwest to northeastern South Dakota, and thence northwestward over northeastern Montana. The reports of United States Army post surgeons and state weather service and voluntary observers show the following maximum temperatures in states and territories where the temperature was reported 80° or above: Cameron, La., 101°; Cactus, Cal., and Fort Ringgold, Tex., 99°; San Simon, Ariz., 96°; Gove City, Kans, 92°; Alva, Fla., 91°; Vaiden, Miss., and Pellville, Ky., 87°; Louisville and Millen, Ga., and Fort Selden, N. Mex., 85°; Citronelle and Wiggins, Ala., and Hardeeville, S. C., 83°; Lead Hill, Ark., Caddo Creek, Ind. T., Willow Springs, Mo., Washington and Winslow, N. C., 81°; Lamar and Las Animas, Colo., Hasson, Ohio, Richmond and Smithfield, Va., 80°. At a number of the older established Signal Service stations in New England, the middle Atlantic, south Atlantic, and Gulf states, the Rio Grande Valley, Tennessee, the Lake region, the upper Mississippi and Missouri valleys, along the eastern slope of the Rocky Mountains, and in the southern plateau region the maximum temperatures for the current month were as high or higher than previously reported for February. The greatest excesses in temperature in the several districts over the highest previous temperature reported for February were, Block Island, R. I., 4° above maximum of 1887, and New London, Conn., 3° above maximum of 1880; Albany, N. Y., 2° above maximum of 1880; at New York City and Lynchburgh, Va., the maximum temperature was the same as that of 1874, and at Atlantic City, N. J., and Cape Henry, Va., the maximum was the same as that of 1880; Charlotte, N. C., 3° above maximum of 1883, and Southport, N. C., 3° above maximum of 1880; Atlanta, Ga., 1° above maximum of 1889; Fort Smith and Little Rock, Ark., the same as maximum of 1883 and 1889, respectively; Galveston, Tex., the same as maximum of 1887; Brownsville, Tex., 1° above maximum of 1889; Chattanooga, Tenn., 4° above maximum of 1887; Rochester, N. Y., 2° above maximum of 1875, and Toledo, Ohio, 2° above maximum of 1883; Port Huron, Mich., 1° above maximum of 1880; Saint Louis, Mo., 4° above maximum of 1887; North Platte, Nebr., 1° above maximum of 1882; Denver, Colo., 5° above maximum of 1879; Fort Sill, Ind. T., and Fort Stanton, N. Mex., 4° and 9°, respectively, above the highest February maximum reported for two or more preceding years; Fort Thomas, Ariz., 5° above February maximum of two or more preceding years; Montrose, Colo., 3° above maximum of 1887. The years of occurrence of the maximum temperature for February in the several districts have been irregular.

The lowest temperature reported by a regular station of the Signal Service was —43°, at Fort Buford, N. Dak., and Fort Maginnis, Mont., on the 26th. The minimum temperature was below —30° in extreme northwestern Minnesota, and north of a line traced thence southwestward to northwestern South Dakota, thence westward over northern Wyoming, and thence northward over western Montana. North of a line traced from north-central Minnesota southwestward to extreme northern Colorado, and thence northwestward to eastern Washington, and in an area in north-central Nevada the minimum temperature fell below —20°. Zero temperatures were reported in New England north of Massachusetts, and north of a line traced from extreme northern lower Michigan southwestward to southwestern Missouri, and thence westward to extreme east-central California, and thence northward over central Oregon and Washington. The highest minimum temperature reported was 65°, at Key West, Fla.; the minimum temperatures were above 40° in the Florida Peninsula and extreme southern Louisiana, and were above 32° (the freezing point) along the immediate south Atlantic coast south of Kitty Hawk, N. C., over the southern parts of the Gulf States east of Galveston, Tex., in the extreme lower Rio Grande valley, along the California coast south of the thirty-ninth parallel, and over southern California and southwestern Arizona. The reports of United States Army post surgeons, state weather services, and voluntary observers, show the following minimum temperatures in states and territories where the temperature fell to, or below, zero: Camp Poplar River, Mont., and Fort Pembina, N. Dak., —46°; Pokegama Falls, Minn., —36°; Scranton, S. Dak., —33°; Fort D. A. Russell, Wyo., —31°; Soda Springs, Idaho, and Fort Niobrara, Nebr., —29°; Breckenridge, Colo., —27°; Boca, Cal., and Elko, Nev., —26°; Larrabee, Iowa, and Jordan Valley, Oregon, —24; West Milan, N. H., Mount Pleasant and Nephi, Utah, —20°; Madison Barracks, N. Y., —19°; Greenwood and Neillsville, Wis., —18°; Chama, N. Mex., —17°; Fairfield, Me., and Fort Brady, Mich., —16°; Scott City, Kans., —14°; Conception, Mo., Lunenburgh and Strafford, Vt., —8°; Groton (1), Mass., and Blue Knob, Pa., —7°; Winslow, Ark., —4°;

New Hartford (1), Conn., and Ochiltree, Tex., —3; and Fort Sheridan, Ill., —2°.

At a number of the regular stations of the Signal Service in the extreme northwest, on the northeastern and middle-eastern slopes of the Rocky Mountains, in the plateau regions, and on the north Pacific coast the minimum temperature for the current month was as low or lower than reported for February of preceding years, and at Hamilton, Bermuda, the temperature fell to 49° on the 24th, the lowest point reached in many years. The following are some of the most marked departures below the lowest previous February temperature: Fort Buford, N. Dak., 12 years record, 2° below minimum of 1887; Fort Sully, N. Dak., 13 years record, the same as minimum of 1875; Fort Maginnis, Mont., 8 years record, 1° below minimum of 1888; Lava, N. Mex., 6 years record, 1° below minimum of 1885; Keeler, Cal., 5 years record, 2° below minimum of 1889; Winnemucca, Nev., 12 years record, 2° below minimum of 1883; Montrose, Colo., 6 years record, 7° below minimum of 1889; Walla Walla, Wash., 5 years record, 4° below minimum of 1887, and Astoria, Oregon, 5 years record, 9° below minimum of 1889. The lowest temperature reported for February in preceding years was generally noted in New England, in the Atlantic coast states south of Pennsylvania, in the Florida Peninsula, and the east Gulf states in 1886 or 1889; in the lower lake region in 1875 or 1885; in the upper lake region in 1875; in the extreme northwest in 1887 or 1888; on the eastern slope of the Rocky Mountains in 1883; in the middle plateau region in 1889; and on the middle Pacific coast in 1884 or 1887; elsewhere the periods of occurrence were irregular. Among extremely low temperatures reported in the several districts for February of preceding years are: —32° at Northfield, Vt., in 1889; —18° at Albany, N. Y., in 1875; —2° at Washington City, in 1886; —10° at Morgantown, W. Va., in 1875; 5° at Kitty Hawk and 6° at Charlotte, N. C., in 1886; 26° at Cedar Keys, Fla., in 1886; 8° at Atlanta, Ga., in 1885; 1° at Fort Smith, Ark., in 1885; —11° at Columbus, Ohio, in 1885; —20° at Detroit, Mich., in 1875; —34° at Duluth, Minn., in 1875; —50° at Saint Vincent, Minn., in 1888; —34° at La Crosse, Wis., in 1875; —32° at Huron, S. Dak., in 1888; —55° at Fort Assinniboine, Mont., in 1887; —54° at Fort Washakie, Wyo., in 1883; —22° at Denver, Colo., in 1883; —4° at Fort Sill, Ind. T., in 1883; —11° at Whipple Barracks, (Prescott) Ariz., in 1880; —20° at Winnemucca, Nev., in 1883; —34° at Fort Klamath, Oregon, in 1884; —14° at Fort Canby, Wash., in 1887; 21° at Sacramento, Cal., in 1884; and 27° at Fresno, Cal., in 1889.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather for February, 1890, is shown on chart iv by a line traced from the coast of North Carolina, near Kitty Hawk, southwestward to Wilmington, N. C., thence west-southwest to southeastern Mississippi, thence northward to Vicksburg, Miss., and thence southwest to the Rio Grande Valley between Rio Grande City and Brownsville, Tex. The western limit of freezing weather is shown by a line traced from the Pacific coast, in about latitude north 39°, east of south over the San Joaquin Valley to the thirty-fifth parallel, and thence southeastward to the lower Gila valley. Compared with the limits of freezing weather for January, 1890, the line showing the southern limit of freezing weather for the current month averages from one to two degrees farther north over the south Atlantic and Gulf states. On the Pacific coast the line of freezing weather is farther east than for the preceding month.

RANGES OF TEMPERATURE.

The greatest and least daily ranges of temperature at regular stations of the Signal Service are given in the table of miscellaneous meteorological data. The greatest monthly ranges of temperature occurred in central Montana, where they exceeded 100°, whence they decreased eastward to western lower Michigan, where they were less than 40°, and thence increased to northwestern New England, where they were more than 60°. From Montana the monthly ranges decreased southeastward to less than 20° over southern Florida, and to less than 50° on the west Gulf coast; southwestward to less than 40° on the coast of extreme southern California, and to less than 30° on the central coast of California; and westward to less than 40° on the north Pacific coast.

The following are some of the extreme monthly ranges:

Greatest.		Least.	
	°		°
Fort Maginnis, Mont	103.0	Key West, Fla	15.0
Colorado Springs, Colo	89.0	San Francisco, Cal	28.0
Fort Reno, Ind. T	82.0	Neah Bay, Wash	31.0
Winnemucca, Nev	79.0	San Diego, Cal	39.0
Northfield, Vt	63.0	Galveston, Tex	41.0

FROST.

A cold wave of unusual severity for the season swept over the Gulf States during the 27th and 28th, attended by frost which greatly damaged spring vegetation, crops, and fruit blossoms in Alabama, Mississippi, Louisiana, and Texas, as far as the Gulf coast. No frost was reported during the month along the Atlantic coast south of the thirty-fourth parallel, in the southern half of Georgia, nor in Florida. The last killing frost generally occurs along the immediate Gulf coast from February 1st to 15th; the occurrence of damaging frost in the regions referred to in the current month was, therefore, two to four weeks later than usual. Compared with the preceding month the southern limit of frost was about three degrees farther north in the south Atlantic states and about two degrees farther south in Texas for February, 1890, while on the central and west Gulf coasts, and thence to the Pacific coast, the southern limit extended to the extreme southern boundary of the country in each month, except in Texas, where it was reported as far south as the lower Rio Grande valley in February only.

In the south Atlantic and Gulf states frost was reported most frequently in North Carolina, where it was noted for eighteen dates; in Louisiana for eleven dates; in Alabama and Mississippi for nine dates; in Texas for eight dates; in South Carolina for six dates; and in Georgia for four dates. On the Pacific coast frost was noted in California for twenty-six dates; in Oregon for twenty-three dates; and in Washington for five dates. In the south Atlantic and Gulf states frost was reported in seven states on the 9th and 10th; in six on the 8th and 16th; in five on the 28th; in four on the 11th, 12th, and 15th; in three on the 7th, 13th, 21st, 22d, and 27th; in two on the 14th; and in one on the 1st, 2d, 3d, 17th, 18th, and 23d. On the 4th, 5th, 6th, 24th, 25th, and 26th no frost was reported in the south Atlantic and Gulf states. In California frost was reported on the 1st, 3d, 4th, 5th, and 7th to 28th; in Oregon on the 6th to 28th; and in Washington on the 19th to 22d, and 26th.

TEMPERATURE OF WATER.

The following table shows the maximum, minimum, and mean water temperature as observed at the harbors of the several stations; the monthly range of water temperature; and the mean temperature of the air for February, 1890:

Stations.	Temperature at bottom.				Mean temperature of air at the station.
	Max.	Min.	Range.	Monthly mean.	
	°	°	°	°	°
Boston, Mass	40.0	33.0	7.0	36.1	33.2
Canby, Fort, Wash	45.3	38.0	7.3	42.6	38.8
Cedar Keys, Fla	72.6	53.6	19.0	67.1	65.5
Charleston, S. C	63.2	55.0	8.2	58.6	60.6
Eastport, Me	36.5	34.3	2.2	35.1	23.4
Galveston, Tex	72.5	57.8	14.7	65.9	63.7
Key West, Fla	76.0	72.1	3.9	74.3	73.3
Nantucket, Mass *	41.0	31.5	9.5	38.0	35.6
Portland, Oregon †	44.4	37.5	6.9	40.5	38.5

* For 22 days only. † For 18 days only.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for February, 1890, as determined from the reports of nearly 2,000 stations, is exhibited on chart iii. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for each Signal Service station. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

The heaviest monthly precipitation reported for February, 1890, was 23.68, at Ellensburgh, Oregon; the monthly precipitation exceeded twenty inches at Delta and Upper Mattole, Cal., and exceeded ten inches in northwestern California, in eastern California between the thirty-eighth and thirty-ninth parallels, along and near the western coast of Oregon, in central Arkansas, central Mississippi, northeastern Alabama, northwestern Georgia, central and southwestern Tennessee, southwestern Kentucky, southwestern Indiana, and extreme western North Carolina. In the northern part of the Panhandle of Texas and thence westward over northeastern New Mexico, and in south-central New Mexico and extreme western Texas, no precipitation was reported, and in central and southeastern Arizona, southeastern California, west-central and southwestern Nevada, west-central Wyoming, southern and northeastern New Mexico, Texas west of the one-hundredth meridian, western Indian Territory, generally over Kansas and Nebraska, eastern and southeastern Colorado, eastern Montana, North Dakota, except in areas in the eastern part, in areas in South Dakota, northwestern Iowa, southwestern Missouri, west-central and southwestern Minnesota, northeastern Florida, east-central Georgia, east-central Virginia, and southwestern West Virginia, less than one-half inch of precipitation was reported.

The precipitation was in excess of the average for the month in the Saint Lawrence Valley, and thence southwestward over northern New England, the lower lake region, the middle Atlantic states, save at immediate coast stations, and in the Ohio Valley, Tennessee, and northern Arkansas; it was also generally in excess of the average in the upper lake region, the middle and northern plateau regions, in Oregon, and along the middle Pacific coast; elsewhere the precipitation for the month was generally deficient. The greatest departures above the average precipitation occurred in north-central Tennessee, where they amounted to nearly six inches, in west-central Oregon, where they exceeded four inches, at Roseburgh and Eola, and five inches at Albany, and in southern Indiana, extreme southern Illinois, generally in Tennessee, in extreme north-central upper Michigan, and in northwestern Oregon, where they exceeded three inches. The greatest departure below the average precipitation reported was 4.32, at Block Island, R. I., and the departures below the average exceeded two inches on the North Carolina coast, and thence southwestward along the coast to northern Florida, and thence westward along the Gulf coast to southern Louisiana; the deficiencies also exceeded two inches in central Illinois, extreme southeastern Arizona, extreme northwestern Washington, and at Los Angeles, Cal. Considered by districts the average percentages of precipitation as compared with the normal amount for the month were about as follows: northern plateau region, 169 per cent.; middle plateau region, 165 per cent.; Ohio Valley and Tennessee, 161 per cent.; upper lake region, 124 per cent.; lower lake region and middle Pacific coast, 122 per cent.; west Gulf states, 111 per cent. In districts where the precipitation was deficient the percentages of the normal were about as follows: middle-eastern slope of the Rocky Mountains, 42 per cent.; extreme northwest, 48 per cent.; south Pacific coast, 49 per cent.; Missouri Valley, 50 per cent.; south Atlantic states, 53 per cent.; Florida Peninsula, 63 per cent.; east Gulf states, 64 per cent.; Rio Grande Valley, and southeastern slope of the Rocky Mountains, 67 per cent.; New England, 72 per cent.; southern plateau region, 78 per cent.; north Pacific coast, 87 per cent.; northeastern slope of the Rocky Mountains, 88 per cent.; upper Mississippi valley, 92 per cent.; and middle Atlantic states, 94 per cent. The statement of percentages shows that the greatest average excesses in precipitation occurred in the Ohio Valley and Tennessee and in the middle and northern plateau regions, where it was more than one-half greater than the average, and that the most marked deficiencies occurred in the extreme northwest, the Missouri Valley, the middle-eastern slope of the Rocky Mountains, and on the south Pacific coast, where the precipitation was less than one-half the usual amount for February.

The table of miscellaneous meteorological data shows that at Palestine, Tex., Marquette, Mich., Valentine, Nebr., Montrose, Colo., Astoria and Roseburgh, Oregon, the precipitation was the greatest, and that at Wilmington, N. C., Pensacola, Fla., Fort Yates, N. Dak., Colorado Springs, Colo., Concordia, Kans., Ft. Reno, Ind. T., Fort Stanton and Lava, N. Mex., Fort Bowie and Wilcox, Ariz., it was the least reported for February during the respective periods of observation, and the table of deviations from average precipitation at certain stations as reported by voluntary observers shows that at Milan, Tenn., six years record, the precipitation for the current month was the greatest noted for February at that place for the period named.

For the period January 1 to February 28, 1890, inclusive, the excesses in precipitation have been greatest in the middle plateau region, where 196 per cent. of the normal precipitation has fallen; in the Ohio Valley and Tennessee the average for the period named has been 155 per cent. of the normal; for the middle Pacific coast, 143 per cent.; for the middle-eastern slope of the Rocky Mountains, 142 per cent.; for the upper Mississippi valley, 139 per cent.; for the south Pacific coast, 137 per cent.; for the lower lake region, 135 per cent.; for the upper lake region, 133 per cent.; for the northern plateau region, 127 per cent.; for the southern plateau region, 124 per cent.; for the west Gulf states, 121 per cent.; for the north Pacific coast, 103 per cent.; and for the southeastern slope of the Rocky Mountains, 101 per cent. The greatest deficiencies in precipitation for the period given have occurred in the south Atlantic states, where but 37 per cent. of the usual precipitation has been reported; in the Florida Peninsula the average has been 40 per cent. of the normal; in the east Gulf states, 51 per cent.; on the northeastern slope of the Rocky Mountains, 65 per cent.; in New England, 69 per cent.; in the middle Atlantic states, 70 per cent.; in the Rio Grande Valley, 71 per cent.; in the extreme northwest, 78 per cent.; and in the Missouri Valley, 86 per cent.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for February for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for February, 1890; (4) the departure of the current month from the average; (5) and the extreme monthly precipitation for February during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of Feb.	(2) Length of record.	(3) Total for Feb., 1890.	(4) Departure from average.	(5) Extreme monthly precipitation for February.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches*		*Inches.*	
Lead Hill	Boone	5.12	8	5.32	+0.20	10.93	1884	1.47	1885
California.									
Sacramento	Sacramento	2.75	40	4.02	+1.27	8.50	1854	0.12	1852
Connecticut.									
Middletown	Middlesex	4.02	27	3.28	−0.74	7.56	1887	1.14	1877

Deviations from average precipitation—Continued.

State and station.	County.	(1) Average for the month of Feb.	(2) Length of record.	(3) Total for Feb., 1890.	(4) Departure from average.	(5) Extreme monthly precipitation for February.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Florida.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches*		*Inches.*	
Merritt's Island	Brevard	2.95	12	1.15	−1.80	6.01	1888	0.15	1882
Georgia.									
Forsyth	Monroe	4.36	16	4.39	+0.03	7.90	1882	1.19	1879
Illinois.									
Peoria	Peoria	2.07	34	1.36	−0.71	5.45	1887	0.06	1877
Riley	McHenry	2.09	39	1.52	−0.57	6.00	1862–65	0.03	1877
Indiana.									
Logansport	Cass	3.95	14	2.53	−1.42	9.01	1857	0.15	1868
Vevay	Switzerland	2.64	24	6.06	+3.42	10.23	1884	0.40	1877
Iowa.									
Cresco	Howard	0.99	18	0.81	−0.18	1.88	1887	0.07	1877
Monticello	Jones	1.89	37	0.98	−0.91	4.62	1887	0.32	1877
Logan	Harrison	1.36	22	1.10	−0.26	5.30	1881	T.	1889
Kansas.									
Lawrence	Douglas	1.27	24	0.75	−0.52	4.60	1881	0.03	1870
Wellington	Sumner	1.11	11	0.45	−0.66	3.73	1883	0.15	1879
Louisiana.									
Grand Coteau	St. Landry	2.80	7	3.85	+1.05	7.44	1888	1.37	1886
Maine.									
Gardiner	Kennebec	3.52	50	3.78	+0.26	9.47	1853	0.58	1877
Maryland.									
Cumberland	Allegany	2.46	17	4.24	+1.78	4.92	1882	0.60	1877
Massachusetts.									
Amherst	Hampshire	3.16	55	3.08	−0.08	6.69	1853	0.36	1877
Newburyport	Essex	4.52	10	4.27	−0.25	6.75	1886	2.30	1889
Somerset	Bristol	3.81	16	2.93	−0.88	8.70	1886	1.00	1877
Michigan.									
Kalamazoo	Kalamazoo	2.72	14	1.53	−1.19	5.44	1881	0.12	1877
Thornville	Lapeer	2.07	13	1.66	−0.41	4.08	1884	0.00	1877
Minnesota.									
Minneapolis	Hennepin	1.15	24	1.28	+0.13	2.80	1869	T.	1877
Montana.									
Fort Shaw	LewisaClarke	0.41	20	0.43	+0.02	1.04	1886	0.05	1877
New Hampshire.									
Concord	Merrimac	2.35	45	2.75	+0.40	7.67	1887	0.50	1865
New Jersey.									
Moorestown	Burlington	3.46	26	3.62	+0.16	6.02	1886	0.53	1877
South Orange	Essex	3.70	19	5.32	+1.62	6.10	1881	1.10	1877
New York.									
Cooperstown	Otsego	2.14	36	2.91	+0.77	5.21	1887	0.60	1856
Palermo	Oswego	2.85	36	2.62	−0.23	7.20	1866	0.10	1877
North Carolina.									
Lenoir	Caldwell	4.19	18	5.70	+1.51	9.00	1873	0.60	1877
Ohio.									
N. Lewisburgh	Champaign	3.10	18	5.95	+2.85	8.20	1883	0.35	1872
Wauseon	Fulton	2.93	16	3.43	+0.50	7.19	1887	0.12	1877
Oregon.									
Albany	Linn	6.03	12	11.18	+5.15	13.08	1881	0.95	1889
Eola	Polk	5.33	20	9.48	+4.15	13.24	1872	0.35	1889
Pennsylvania.									
Dyberry	Wayne	2.66	24	3.74	+1.08	5.59	1884	0.60	1877
Grampian Hills	Clearfield	3.35	18	5.52	+2.17	7.62	1887	1.56	1872
Wellsborough	Tioga	6.23	10	2.28	−3.95	10.93	1884	0.95	1887
South Carolina.									
Statesburgh	Sumter	2.85	8	1.65	−1.20	5.47	1889	1.18	1883
Tennessee.									
Austin	Wilson	5.30	21	9.13	+3.83	12.57	1887	0.75	1868
Milan	Gibson	4.45	6	8.14	+3.69	8.14	1890	1.31	1889
Texas.									
New Ulm	Austin	4.43	17	3.09	−1.34	10.90	1882	1.06	1885
Vermont.									
Strafford	Orange	2.79	16	4.40	+1.61	5.90	1887	0.30	1877
Virginia.									
Birdsnest	Northampton	3.55	21	1.90	−1.65	6.55	1884	1.40	1877
Wisconsin.									
Madison	Dane	1.72	25	2.01	+0.29	7.90	1869	0.30	1877
Washington.									
Fort Townsend	Jefferson	1.81	15	1.91	+0.10	3.94	1879	0.37	1886

EXCESSIVE PRECIPITATION.

The table of excessive precipitation shows that monthly precipitation to equal or exceed ten inches was reported at ten stations in California and Tennessee; at six stations in Oregon; at five stations in Kentucky; at four stations in Mississippi; at three stations in Arkansas; at two stations in Alabama; and at one station in Georgia, Indiana, North Carolina, and Texas. Among the heavier monthly rainfalls reported were, 23.68, at Ellensburgh, Oregon; 21.11, at Delta, Cal.; 20.36, at Upper Mattole, Cal.; 15.75, at Lawrenceburgh, Tenn.; and 13.33, at Burnside, Ky.

In February of preceding years precipitation to equal or exceed ten inches has been reported for sixteen years in California and Oregon; for fourteen years in Washington; for eleven years in Alabama; for from five to ten years, inclusive, in Florida, Georgia, Indiana, Mississippi, New York, North Carolina, Tennessee, and Texas; and for from one to four years, inclusive, in Arkansas, Connecticut, Illinois, Indian Territory, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, New Hampshire, New Mexico, Ohio, Pennsylvania, Rhode Island, South Carolina, and Virginia. In states and territories other than those named, precipitation to equal or exceed ten inches has not been reported for February of preceding years. The following are among the more notable heavy rainfalls for February of preceding years: Cisco and Summit, Cal., 22.85 and 20.70, respectively, in 1887; Cape Charles Light House, Va., 21.90, in 1868. Exclusive of the instances and years cited, precipitation to equal or exceed fifteen inches in February has been reported for four years in California; for three years in Oregon and Washington; and for one year in Georgia, Indiana, Louisiana, New York, North Carolina, South Carolina, Tennessee, and Texas.

For the current month precipitation to equal or exceed 2.50 inches in twenty-four hours was reported at twenty-one stations in Mississippi, and on seven dates, the 7th, 8th, 20th, 25th, and 26th to 28th; in Tennessee at nineteen stations, and on six dates, the 7th, 8th, and 25th to 28th; in Oregon at ten stations, and on three dates, the 1st, 2d, and 3d; in Indiana at seven stations, and on four dates, the 21st, and 24th to 26th; in California at six stations, and on two dates, the 3d and 4th; in Alabama at five stations, and on four dates, the 7th, and 25th to 27th; in Kentucky at five stations, and on three dates, the 23d, 24th, and 25th; in Arkansas at four stations, and on three dates, the 7th, 25th, and 27th; in Louisiana at four stations on the 7th; in Illinois at three stations, and on two dates, the 25th and 26th; in Arizona at two stations, and on two dates, the 20th and 21st; in Texas at two stations, and on four dates, the 7th, 13th, 26th, and 27th; in Georgia at one station on the 27–28th; in Maryland at one station on the 7–8th; in Missouri at one station on the 7th; in New York at one station on the 7–8th; in North Carolina at one station on the 25th; and in Washington at one station on the 2d. The following are among the heavier rainfalls reported for the period named: Ellensburgh, Oregon, 6.18 on the 1st; Longview, Tex., 6.00 on the 26th; Rienzi, Miss., 5.77 on the 7th; Lawrenceburgh, Tenn., 5.50 on the 27th; Upper Mattole, Cal., 5.17 on the 4th; Chataignier, La., 5.00 on the 7th; Columbiana, Ala., 4.90 on the 26th; Bowling Green, Ky., 3.81 on the 24th; and Newport, Ark., 3.69 on the 25th.

For February of preceding years precipitation to equal or exceed 2.50 inches in twenty-four hours has been reported for ten years in Alabama and Texas; for from five to nine years, inclusive, in Arkansas, Connecticut, Florida, Georgia, Illinois, Louisiana, Mississippi, New York, North Carolina, Tennessee; and in from one to four years, inclusive, in California, Dakota, Delaware, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Missouri, New Jersey, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Virginia, Washington, and Wisconsin. In states and territories other than those named precipitation to equal or exceed 2.50 inches in twenty-four hours has not been reported for February of preceding years. The heaviest February rainfall reported in preceding years for the period given was, 10.10, at Oneida, N. Y., 13th, 1874. In Louisiana and Tennessee rainfall to equal or exceed five inches in twenty-four hours has been reported for two years; and in Connecticut and Virginia for one year.

For the current month precipitation to equal or exceed one inch in one hour was reported as follows: 1.93, in thirty minutes, at Louisville, Miss., on the 26th; 1.02, in thirty minutes, at Livingston, Ala., on the 24th; 1.04, in forty minutes, at Hatteras, N. C., on the 8th; 1.17, in one hour, at Indiana, Pa., on the 20th; 3.00, at Lawrenceburgh, Tenn., on the 26th; and 2.48, in two hours, at Vidalia, La., on the 27th.

In February of preceding years precipitation to equal or exceed one inch in one hour has been reported for four years in Tennessee; for three years in Mississippi, North Carolina, and Texas; for two years in Arkansas and California; and for one year in Alabama, Florida, Georgia, Kansas, and Michigan. In states and territories other than those named precipitation to equal or exceed one inch in one hour has not been reported for February of preceding years. The heaviest rainfalls re-

ported for this period in February of previous years are, 3.04, in fifty-five minutes, at Galveston, Tex., 27th, 1872, and 3.31, in one hour, at Galveston, Tex., 22d, 1888.

Table of excessive precipitation, February, 1890.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Columbiana		4.90	26			
Double Springs	11.42	3.20	7			
Do		3.00	27			
Livingston(1)		2.81	7	1.02	0 30	24
Valley Head	11.61	3.10	26			
Do		4.50	27			
Wiggins		3.06	25-26			
Arizona.						
Tip Top		3.00	20			
Walnut Grove		3.70	20-21			
Arkansas.						
Conway	11.08					
Dardanelle	10.23	3.50	25			
Forrest City		3.00	27			
Helena(1)		2.98	7			
Newport(1)	12.59	3.69	25			
California.						
Arcata	14.78	4.93	3			
Do		2.54	4			
Boulder Creek	10.62					
Delta	21.11					
Eureka	13.88	4.91	3			
Ferndale	10.77	3.15	4			
Fort Gaston	15.58					
Hydesville	10.13	2.50	3			
Sims	18.30					
Sonoma	12.87					
Upper Mattole	20.36	4.50	3			
Do		5.17	4			
Walla Walla Creek		2.62	3			
Georgia.						
Diamond	10.75	2.75	27-28			
Illinois.						
Golconda		2.74	25-26			
Grand Tower		3.00	25			
Mount Carmel		2.60	25			
Indiana.						
Columbus		2.85	25			
De Gonia Springs		2.50	25			
Huntingburgh	12.12	2.50	21			
Marengo		3.00	25			
Mount Vernon(1)		2.87	26			
Mount Vernon(2)		2.87	25			
Princeton		2.95	24-25			
Vincennes		2.95	25			
Kentucky.						
Bowling Green	12.50	3.81	24			
Burnside	13.33	3.25	25			
Greensburgh	12.35	3.43	24			
Murray	12.46	2.98	23			
Do		2.65	24			
Princeton	10.77	2.70	25			
Louisiana.						
Chataignier		5.00	7			
Clinton		3.65	7			
Melville		3.05	7			
Vidalia		3.16	7	2.48	2 00	27
Maryland.						
Jewell		2.50	7-8			
Mississippi.						
Agricultural College		2.50	7			
Batesville		2.60	7			
Booneville	11.23	5.70	7			
Do		3.07	28			
Canton		2.98	27			
Columbus		3.15	7			
Edwards		2.70	7			
Fayette		2.65	7			
Holly Springs		3.00	7			
Do		2.62	27			
Jackson	10.50	3.70	7			
Do		3.10	25			
Kosciusko		2.60	7			
Do		2.50	26			
Lake		3.00	7			
Louisville		3.37	7	1.93	0 30	26
Do		2.01	26			
Meridian		2.94	7-8			
Natchez		2.50	27			
Okalona		3.20	7			
Palo Alto		2.57	7			
Riensi	12.11	5.77	7			
Do		3.78	27			
University		2.70	7			
Vaiden	10.41	4.07	20			
Washington		3.05	7			
Waynesboro' (1)		3.90	27			
Missouri.						
New Haven		3.00	7			
New York.						
Potsdam		4.00	7-8			
North Carolina.						
Hatteras				1.04	0 40	8
Highlands		3.00	25			
Murphy	10.48					

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Oregon.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Albany	11.18	4.50	1			
Do		3.00	2			
Astoria	11.48	3.24	1			
Bandon		2.55	3			
Ellensburgh	23.68	6.18	1			
Do		6.12	2			
Do		4.25	3			
Eola		5.30	1			
Grant's Pass	10.12	2.54	3			
McMinnville		4.67	1-2			
Mount Angel		2.85	2			
Portland		3.81	1-2			
Siskiyou	14.40					
Tillamook	14.10	4.17	1			
Do		2.58	2			
Pennsylvania.						
Indiana				1.17	1 00	20
Tennessee.						
Arlington	11.20	2.50	25			
Ashwood	10.34					
Clarksville		2.61	25			
Cog Hill		3.50	25			
Covington	10.72					
Dunlap		3.45	7			
Fayetteville		2.78	8			
Florence station	10.96	2.76	25			
Grand Junction		2.56	7			
Do		3.60	27			
Grief		3.50	27			
Hohenwald	11.43	4.14	7			
Do		2.60	27			
Kingston	11.09					
Kingston Springs		2.75	7			
Lawrenceburgh	15.75	2.50	25	3.00	2 00	26
Do		3.00	26			
Do		5.50	27			
Nashville	10.95	2.52	7-8			
Nunnelly		2.53	7			
Parksville		2.51	26			
Riddleton		2.64	27			
Rugby	11.75	2.73	25			
Do		3.30	8			
Sharps		4.00	27			
Watkins	10.28	3.50	8			
Waynesborough		4.00	7			
Texas.						
Columbia		2.70	7			
Do		2.75	13			
Longview	12.85	6.00	26			
Do		3.00	27			
Washington.						
Vancouver Barracks		3.60	2			

Received too late for publication in January Review.

California.						
Arcata	16.85	3.39	12			
Delta	17.18					
Dunsmuir	23.60					
Glenn Ellen	19.28					
Vacaville	11.74					
Walla Walla Creek	11.86					
Illinois.						
Palestine	3.29	1				
Do	3.00	5				
Oregon.						
Bandon	20.75	4.03	28			
Ellensburgh	31.84	3.56	15			
Do		3.96	24			
Do		4.89	24			
Do		2.63	29			
Grant's Pass	13.88					
Siskiyou	12.80					
Toledo	20.60	2.62	28			
Do		2.85	31			
Tillamook	19.55					
Utah.						
Alta	12.00					

Received too late for general discussion of weather, February, 1890.

Oregon.						
Corvallis		3.20	1-2			
Creswell		3.01	1			
Cascade Locks	22.28	4.82	1			
Do		5.88	2			
Do		5.09	3			
Gardiner	14.33	3.61	1			
Do		2.78	2			
Hubbard		2.51	2			
Hood River		2.58	1			
Jacksonville		2.62	3			
Tillamook		4.17	1			
Toledo	10.35	3.40	1			
Vernonia	10.04	2.78	1			
Texas.						
Gainesville		2.75	24			

MAXIMUM RAINFALLS IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfalls during February, 1890, for periods of five and ten minutes and one hour, as reported by regular stations of the Signal Service furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Bismarck, N. Dak*						
Boston, Mass	0.03	25	0.05	25	0.20	25
Buffalo, N. Y.	0.05	20	0.05	20	0.15	8
Cincinnati, Ohio	0.18	19	0.25	19	0.40	19, 25
Chicago, Ill*						
Detroit, Mich.	0.03	25	0.05	25	0.15	25
Galveston, Tex	0.10	13	0.15	13	0.37	7
Jupiter, Fla	0.27	9	0.35	9	0.65	9
Marquette, Mich*						
New York City	0.10	14	0.16	14	0.47	14
New Orleans, La	0.15	7	0.20	7	0.40	7
Norfolk, Va.	0.11	14	0.20	14	0.52	14
Savannah, Ga	0.05	8	0.10	8	0.18	10
San Francisco, Cal	0.05	19	0.07	16, 19	0.31	16
Saint Louis, Mo	†	.....	†	.....	0.12	13
Washington City	0.05	8	0.10	8	0.35	8

* No record on account of snow. † Too small for gauge to record.

SNOW (snowfall in inches and tenths.)

The greatest depth of snowfall was reported in Placer County, Cal., along the line of the Central Pacific Railroad crossing the summit of the Sierra Nevada Mountains, where one hundred and forty-nine inches fell at Cisco, and ninety-eight inches at Emigrant Gap. Eighty-nine inches were reported at Truckee, Nevada Co., Cal., and sixty-six inches at Lick Observatory, Mount Hamilton, Cal. Fifty inches or more of snowfall were reported at Boca and Colfax, Cal., and Marquette, Mich; from thirty to fifty inches in areas in west-central Colorado, northern and southeastern Idaho, northern upper Michigan, northern lower Michigan, northeastern Nevada, northern Utah, northwestern Wyoming, east-central and northeastern Wisconsin, and at Blue Knob, Pa.; from twenty to thirty inches in northeastern New Hampshire, south-central Vermont, central and northwestern New York, northeastern lower Michigan, extreme north-central New Mexico, central Arizona, and east-central Nevada; from ten to twenty inches in Maine, north-central and northeastern Massachusetts, extreme north-central Illinois, north-central and northeastern Iowa, southeastern Minnesota, northeastern Pennsylvania, central Virginia, western Maryland, central Missouri, north-central Nebraska, southwestern Montana, and northern and eastern Washington, eastern Oregon, and generally in Idaho. The southern limit of snow for February, 1890, is indicated by a line traced from the Atlantic coast in about latitude north 39° southwestward to northern Alabama, thence northwest to extreme western Kentucky, thence westward over southern Missouri and northeastern Arkansas, thence southwestward to central Texas, thence westward to south-central Arizona, and thence northwestward to the Pacific coast in about latitude north 40°. The great depth of snow in the deep cuts along the Central Pacific Railroad crossing the summit of the Sierra Nevada Mountains caused an intermittent and exceedingly difficult train service until the latter part of the month.

Snowfalls of ten inches or more were reported, as follows, and in states and territories where the maximum depth was below that amount, the station reporting the greatest is given: *Alabama.*—Double Springs, trace. *Arizona.*—Volunteer Springs, 22. *California.*—Cisco, 149; Summit, 116; Emigrant Gap, 98; Truckee, 89; Sisson, 76; Mount Hamilton, 66; Colfax, 56; Boca, 54; Susanville, 47; Sims, 32; Placerville, 18; Hornbrook, 17.5; Fort Bidwell, 14.6; El Dorado, 14; Delta, 13; Montague, 11; Auburn and Shingle Springs, 10.5. *Colorado.*—Aspen, 44; Rifle Falls, 28; Frazer, 25.5; Leadville, 18; Durango, 16; Emma, 14.2; Breckenridge, 14; T. S. Ranch, 11; Moraine, 10.8; Georgetown, 10.5; Boulder Canyon, 10. *Connecticut.*—Falls Village and Waterbury, 6. *District of Columbia.*—Washington City, 1.5. *Idaho.*—Fort Sherman, 43.2; Soda Springs, 35; Kootenai, 29; Era, 17; Boisé Barracks, 12; Boisé City, 11. *Illinois.*—Rockford, 17; Winnebago, 15; Rock Island Arsenal, 11.2; Cockrell, 11; Belvidere and Centralia, 10. *Indiana.*—Columbia City, 5.8. *Iowa.*—West Bend, 13.5; McCausland, 13; Le Claire, 12; Logan, 11; Independence, 10.8; Dubuque, Iowa City, and Muscatine, 10.5; Storm Lake, 10.2; Manson and Maquoketa, 10. *Kansas.*—Conway, 8.5. *Kentucky.*—Lexington, 7. *Maine.*—Belfast, 19; Bar Harbor, 17; Eastport, 16.9; Cornish, 16; Lewiston, 15; Calais and Orono, 13; Fairfield and Gardiner, 12; Portland, 10.9. *Maryland.*—Cumberland, 10.3. *Massachusetts.*—Fitchburgh and Groton, 10. *Michigan.*—Marquette, 54.3; Atlantic, 46; Bear Lake, 41; Calumet, 30.5; Traverse City, 30; Alpena, 29.9; Benzonia, 27.9; Gulliver Lake, 26.1; Caldwell, Hillman, and Roscommon, 26; Grayling, 25.5; Lathrop, 25; Manistee, 23; Ivan and Saint Ignace, 22; Weldon Creek, 21.9; Sault de Ste. Marie, 20.9; Fort Brady, 20.2; Mio, 20; Crystal Falls, 17.5; Charlevoix, 17; Harrisville, 16.1; Hart, 15; West Branch, 14.4; Stanton, 14.4; Big Rapids and Harrison, 14; Ionia, 13; East Tawas, 12.6; Gladwin, 12; Otsego, 10.5; Chase, 10. *Minnesota.*—Minneapolis, 11.2; Duluth, 10.9. *Missouri.*—Columbia, 9.8. *Montana.*—Virginia City, 16. *Nebraska.*—Kennedy, 19; Valentine, 12.2. *Nevada.*—Fenelon, 34.5; Carson City, 26.9; Toano, 18; Reno, 17.5; Wells, 15.1; Browns and Carlin, 14; Tecoma, 13; Palisade, 12.5; Humboldt, 11.5; Beowawe, 10. *New Hampshire.*—Berlin Mills, 27; Plymouth, 21; Manchester *a*, 16.4; Manchester *b*, 16; West Milan, 15; North Sutton and Walpole, 14; Hanover *a*, 13.6; Hanover *b*, 13; Antrim and Concord, 12; Nashua and Newton, 11; East Canterbury, 10.8. *New Jersey.*—Locktown and South Orange, 2.2. *New Mexico.*—Chama, 29; Nogal, 18. *New York.*—Constableville, 24.5; Number Four, 23.2; Ogdensburgh, 20.5; Canton, 19.9; Ampersand, 19; Sherman, 17; Utica, 16.2; North Hammond, 15.5; Malone and Rochester, 14.8; Brookfield, 13.5; Lyons and Potsdam, 12.5; Queensbury, 11.2; Oswego, 10.4. *North Carolina.*—Hot Springs, trace. *North Dakota.*—Fort Yates, 5.6. *Ohio.*—Jefferson, 5.3. *Oregon.*—Siskiyou, 46; Joseph, 28.2; Heppner, 17; Baker City, 10.3. *Pennsylvania.*—Blue Knob, 31; Eagle's Mere, 13.5; Gettysburgh and Wellsborough, 11.5. *Rhode Island.*—Pawtucket and Providence, 4. *South Dakota.*—Spearfish, 8.2. *Tennessee.*—Rugby, 3.5. *Texas.*—Menardville, 12. *Utah.*—Ogden *a*, 34; Ogden *b*, 32; Losee, 24; Mount Pleasant and Salt Lake City, 18; Levan, 11.5; Corinne, 11; Alta, 10. *Vermont.*—Chelsea, 24; Strafford, 23; East Berkshire, 18.4; Jacksonville, 17; Hartland, 15; Northfield, 14.5; Lunenburgh, 12; Burlington, 11; Cornwall, 10. *Virginia.*—Woodstock, 10.5. *Washington.*—Spokane Falls, 17.9; Fort Walla Walla, 16.8; Blakeley, 16.5; Port Angeles, 11.5; Walla Walla, 10.8. *West Virginia.*—Tannery, 6.2. *Wisconsin.*—Manitowoc, 32.1; Green Bay, 30.2; Greenwood, 29.8; Embarrass, 27.8; Oshkosh, 27; Waucousta, 26; Summit Lake, 23.5; Milwaukee, 17.1; Glasgow and Neillsville, 16; Delavan, 13; Gadiz, 12; Lincoln, 11.9; Phillips, 10. *Wyoming.*—Camp Sheridan, 36.5; Carbon, 32.8; Saratoga, 32.5; Fort Bridger, 17.5; Lusk, 15.8; Camp Pilot Butte, 12.

DEPTH OF SNOW ON GROUND AT CLOSE OF MONTH.

Chart iv shows the depth of snow reported on the ground at the close of the month. In New England snow was reported as far south as extreme northeastern Massachusetts, and a depth of ten to eleven inches was noted in southwestern Maine; in the middle Atlantic states trace of snow was reported at Dyberry, northeastern Pennsylvania, and two inches at Turin, central New York; in the Ohio valley trace was reported as far south as west-central Kentucky, and the greatest depth, about one-half inch, was reported at Indianapolis, Ind. West of the Mississippi River snow was reported on the ground north of a line traced from southern Missouri westward over southern Kansas, thence southwestward to central New Mexico, as far south as central Arizona, and on the Pacific coast as far south as Lick Observatory, Mount Hamilton, Cal. and in the

mountain regions in northeastern California. In west-central Colorado forty-eight inches were reported; at Lick Observatory, Cal., forty inches; in extreme northern upper Michigan, forty-six inches; in east-central and northeastern Wisconsin, thirty inches; in northern Utah, twenty inches; in southeastern Wyoming more than twenty inches; and in parts of northern Illinois, northeastern, eastern, and northern Iowa, northern Minnesota, North Dakota, and Montana, more than five inches. Compared with the preceding month the southern limit of snow on the ground at the close of the respective months was somewhat farther south in the central valleys and in the Rocky Mountain and plateau regions at the end of February.

HAIL.

Descriptions of the more severe hail storms of the month are given under the head of "Local storms." Hail was reported as follows: 1st, Ind., Ky. 2d, Mo. 5th and 6th, Kans. 7th, Ill., La., Mass., Miss., N. J., N. Y., Pa., Tex. 9th, Oregon. 10th, Wash. 11th, Oregon. 13th, Tex. 14th, Mass., Pa., Wash. 15th, Oregon, Wash. 16th, Cal., Oregon. 17th, Cal., Ind., Mich., Pa. 18th, Cal., Ind., Mass., N. Y., Pa. 19th, Cal., Ill., Ind., Iowa, Mich., Mo., Nev., N. J., N. Y., Pa. 20th, Cal., Md., Mass., N. Y., Pa. 21st, Cal., Tex. 22d, Cal., S. C., Tenn. 23d, Cal., Ill., Mo., Oregon, Tenn., Tex. 24th, Ala., Ark., Ga., Ill., Ind., Ky., Miss., Mo., Ohio, Tenn., Tex. 25th, Ala., Ark., Cal., Ind., Iowa, Ky., Miss., Mo., N. Y., N. C., S. C., Tenn., Tex., Va. 26th, Ga., Kans., Ky., La., Miss., Mo., N. C., Tenn., Tex. 27th, Ala., Ill., Kans., La., Miss., Mo., Tex. 28th, Ill., Me., Nev., N. J., Tex.

SLEET.

Sleet was reported as follows: 1st, Cal., Ill., Ind., Ky., Pa., Va. 2d, Conn., Mass., Pa. 3d, N. Y. 4th, Mich., Minn., N. Y., Vt. 5th, Ill., Mo., N. C., Tenn., Vt. 6th, Ill., Kans., Md. 7th, Ill., Ind., Kans., Minn., Mo., Nebr., N. J., N. C., Ohio, Pa., S. C., Tenn., Va. 8th, Me., Mass., N. Y., Pa., S. C., Tenn., Vt. 9th, Conn. 12th, Me., N. Y. 13th, Tex. 14th, N. Y., Wash. 15th, Oregon, Wash. 17th, Mass., Minn., N. Y., Pa. 18th, Conn., Mass., N. Y., Pa., Vt. 19th, Ill., Iowa, Mass., Mich., N. J., N. Y., Ohio, Pa., Va. 20th, Cal., Conn., N. Y., Pa. 21st, Cal., N. Mex. 22d, Cal., Ill., Ind., Kans., Mo., N. Y., N. C., S. C. 23d, D. C., N. C., Utah. 24th, Me., N. Mex., Oregon, Tenn. 25th, Ill., Kans., Mo., Tenn., Tex. 26th, Ill., Ind. T., Iowa, Kans., Mo., Tenn. 27th, Ariz., Ark., Ill., Ind. T., Iowa, Kans., Mo., N. Y., Tex. 28th, Ill., Ind., Me., Mich., Miss., N. J.

WINDS.

The prevailing winds during February, 1890, are shown on chart ii by arrows flying with the wind. In New England and over the middle-eastern and northeastern slopes of the Rocky Mountains the winds were mostly from north to west; in the middle Atlantic states, from northeast to northwest; in the south Atlantic states, from south to southwest; in the east Gulf states and over the northern plateau region, from southeast to southwest; in the west Gulf states, southerly; in the upper Mississippi valley and over the middle plateau region, from northwest to southwest; in the Missouri valley and the extreme northwest, from north to northwest; over the southern plateau region and on the north Pacific coast, from south to west; on the south Pacific coast, northerly; and over the Florida Peninsula, in the Ohio valley and Tennessee, the upper and lower lake regions, over the southeastern slope of the Rocky Mountains, and on the middle Pacific coast, variable.

HIGH WINDS (in miles per hour).

Maximum velocities of fifty miles, or more, per hour were reported at regular stations of the Signal Service as follows: 1st, 66, s., at Fort Canby, Wash. 3d, 70, s., at Fort Canby, Wash.; 50, sw., at North Platte, Nebr.; 50, sw., at Walla Walla, Wash. 4th, 64, nw., at Bismarck, N. Dak.; 72, nw., at Fort Buford, N. Dak.; 64, w., at Cheyenne, Wyo.; 52, sw., at Fort Custer, Mont.; 84, sw., at Fort McKinney, Wyo. 6th, 60, nw., at Fort Buford, N. Dak.; 51, sw., at Wood's Holl, Mass.; 60, w., at Helena, Mont. 7th, 62, nw., at Bismarck, N. Dak.; 52, s., at Fort Canby, Wash.; 60, se., at Erie, Pa. 8th, 59, w., at Buffalo, N. Y.; 53, se., at Wood's Holl, Mass.; 60, nw., at Hatteras, N. C. 10th, 53, n., at Pueblo, Colo. 12th, 50, s., at Fort Canby, Wash. 13th, 55, w., at Whipple Barracks (Prescott), Ariz. 15th, 50, nw., at Wood's Holl, Mass. 16th, 50, nw., at Wood's Holl, Mass.; 54, sw., at Winnemucca, Nev.; 52, s., at Whipple Barracks (Prescott), Ariz. 19th, 52, sw., at Whipple Barracks (Prescott), Ariz. 21st, 65, sw., at Whipple Barracks (Prescott), Ariz.; 60, nw., at Wood's Holl, Mass.; 54, nw., at Block Island, R. I. 23d, 50, w., at Cheyenne, Wyo. 25th, 60, se., at Lexington, Ky. 26th, 54, sw., at Fort Stanton, N. Mex. 28th, 58, w., at Buffalo, N. Y.

LOCAL STORMS.

Destructive local storms were reported in Geneva county, Alabama, on the 7th, and in Talladega and Pickens counties, Alabama, and in Kemper county, Miss., on the 27th; a severe thunder-storm was reported at Meridian, Miss., on the 7th; a heavy hail-storm occurred at Livingston, Ala., and at Humboldt and Mason, Tenn., on the 24th; and unusually strong gales were reported at Fort Buford, N. Dak., on the 4th; at Helena, Mont., on the 6th; at points in the interior of southwestern Pennsylvania on the 7th; along the New Jersey coast from the 7th to 9th; at Lexington, Ky., Brownsville, Tenn., and Gainesville, Tex., on the 25th; at Paducah, Ky., Johnsonville, Tenn., and Marksville, La., on the 26th; at Shuqualak, Miss., on the 27th; and at Jackson, Miss., on the 28th. At Fort Buford, N. Dak., on the 4th, the wind attained an extreme velocity of ninety-six miles per hour, and the average velocity for four hours was fifty-one miles per hour. At Helena, Mont., the maximum velocity on the 6th, sixty miles per hour from the west, was the highest velocity recorded at that place since the establishment of the Signal Service station in 1879. Prof. M. L. Ray, Superintendent of Education of Geneva county, Alabama, makes the following report relative to a tornado which passed over that county on the 7th: "The first place where the storm did any damage was about one-half mile south of Eunola. From there it took a course about 20° east of north, uprooting and snapping off trees of all sizes. My dwelling being in the track, was entirely swept away, and all the other houses in the place were either totally destroyed or so badly damaged as to render them almost worthless. The storm continued its destructive course for about six miles. The path of the storm is not straight, but turns first one way and then another, and sometimes seems to reach out on either side like the teeth of a saw. When the tornado approached my house we had no time to get out of its way, and we seemed to be enveloped in a cloud of sparks just as the timbers thundered around us." On the 7th a thunder, rain, and hail storm passed over Meridian, Miss.; the storm was very severe at towns to the westward of that place, and numerous washouts were reported along the railroads. At Enterprise, Miss., hail fell to a depth of several inches. Destructive storms prevailed on the 7th in Fayette, Centre, and Cambria counties, Pennsylvania. A severe storm prevailed along the New Jersey coast from the 7th to 9th, causing high tides and doing considerable damage to property. On the 18th a thunder-storm, accompanied by vivid lightning, snow, hail, and sleet, occurred at Boston, Mass., from 10.04 to 10.20 p. m. On the 24th a severe rain and hail storm occurred at Livingston, Ala.; 1.02 inch of rain fell from 3.00 to 3.30 p. m., and for ten minutes of that time the largest hail-stones ever observed in that section fell. The larger hail-stones ranged in weight from one to two ounces,

were flattened, and were from five to seven inches in circumference, and the area in which they fell was some ten or twelve miles north and south and six or seven miles east and west. A severe wind and hail storm was also reported at Humboldt and Mason, Tenn., on the 24th. At the first-named place the storm occurred at 6.30 p. m.; it came from the southwest, and the hail-stones were the size of hickory nuts. At Mason the storm occurred shortly after noon, and lasted about fifteen minutes, and some of the hail-stones were one inch in diameter. At Lexington, Ky., the wind attained an extreme maximum velocity of ninety-six miles per hour at 4.45 p. m., after which the wind increased in force, but no record could be made. On the 25th a storm passed over Gainesville, Tex., destroying several buildings. The storm was reported the most destructive that had visited that place in years. A storm from the southwest also passed over Brownsville, Tenn., on the 25th, causing damage to the amount of about $50,000. At 3.30 p. m. of the 26th a wind storm, accompanied by hail, caused great damage to property at Marksville, La. On the same date a very destructive storm swept over Johnsonville, Tenn., and a storm destroyed a number of buildings near Paducah, Ky. On the night of the 27th a violent wind storm visited Needmore, a small town near Talladega, Ala., doing considerable damage to property and injuring several persons. The storm swept parallel with the track of the heavy storm of twenty-two years ago, passing about two miles south of the latter; its track was strewn with timber, fragments of furniture, and household goods; large trees were twisted off at the ground, and planks and heavy timber were driven into the ground with the force of a pile-driver. On the same date a heavy storm from the southwest passed three miles south of Carrollton, Ala., at 7.30 p. m. The storm displayed the characteristics of a whirlwind; trees that had been uprooted or broken off were scattered in every direction along its path; one man was killed and several injured. But few houses were situated in its path, otherwise the damage would have been greater. Another severe storm passed about fifteen miles north of Carrollton on the same day; a destructive storm from the southwest passed through Kemper county, Mississippi, at 5 p. m.; and at night a storm caused great damage at Bentonia, Yazoo Co., Miss.

INLAND NAVIGATION.

ICE IN RIVERS AND HARBORS.

Lake Erie remained open during the month, and but little ice was reported in Lake Huron. The Signal Service observer at Buffalo reports that navigation could have been continued at the west end of Lake Erie throughout the winter. At the close of the month Thunder Bay and Thunder River were partly covered with ice. On the 28th steamers commenced to make regular trips from Detroit, Mich., to Cleveland, Ohio. This was the earliest opening of navigation on record at the port of Detroit. On the 6th the ice ran out of the Mississippi River at Davenport, Iowa.

FLOODS.

Owing to the rapid melting of snow which had formed in drifts fifteen to twenty feet deep in the hills and mountains of Oregon, and the excessive rains of the last of January and the first part of February, the streams in western Oregon rose rapidly, and the loss by flood in the state is estimated at not less than $1,000,000. At Portland, Oregon, the Willamette River reached 28.7 feet on the gauge at 8 p. m. of the 5th, which was the highest point ever recorded at that place; railroad communication was cut off, and a greater part of the city was under water to a depth of two to four feet. In southern Oregon disastrous floods occurred along the Rogue River and its tributaries. The Sacramento River overflowed its banks at Red Bluff, Cal., damaging property, and in the valleys of the Eel and Mad rivers the bottom lands were flooded, and bridges, stock, and houses were carried away. Portions of Eureka, Cal., also sustained damage by flood. Considerable damage was reported near Los Angeles, Cal., by the Los Angeles River changing its course just south of that city and inundating a considerable extent of country. The continued heavy rains during the first half of the month caused freshets in western Pennsylvania and eastern Ohio. The Ohio River rose above the danger-line at Cincinnati, Ohio, on the 25th, and at Louisville, Ky., on the 26th, and on the 28th it was 5.7 feet above the danger-line at Cincinnati, and 7.6 feet above the danger-line at Louisville. Navigation and railroad traffic were interfered with at Cincinnati by the flood, and the river overflowed its banks and flooded cellars at Louisville. During the latter part of the month great damage was caused in west-central Kentucky by the overflow of the Green River. In the vicinity of Findlay and Lima, Ohio, swollen streams caused great damage to railroad tracks and bridges. The Tennessee River and the creeks in Tennessee overflowed their banks, and the lower part of Chattanooga, Tenn., was flooded. Damage was caused near Waco, Tex., by overflowing streams. At Fort Verde, Ariz., the Verde River reached the highest point known at that place on the 21st, drowning cattle and washing out irrigating ditches, and a large area of the Gila Valley was under water during the latter part of the month, flooding sections which had been considered safe from inundation, and severely damaging irrigating canals. On the 22d a large storage dam built across the Hassayampa River about thirty miles above Wickenburgh, Ariz., gave way under pressure of floods caused by heavy rains and melting snow, causing loss of life and destroying considerable property.

STAGE OF WATER IN RIVERS AND HARBORS.

The following table shows the danger-points at the several stations; the highest and lowest water during February, 1890, with the dates of occurrence and the monthly ranges:

Heights of rivers above low-water mark, February, 1890 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River:						
Shreveport, La.....	29.9	28	20.5	13	17.9	2.6
Arkansas River:						
Fort Smith, Ark ...	22.0	5, 16	11.8	2	5.3	6.5
Little Rock, Ark...	23.0	28	19.0	2	9.5	9.5
Missouri River:						
Ft. Buford, N. Dak*	.....	.....	.....	.....	.....	.....
Kansas City, Mo...	21.0	12	8.0	28	0.7	7.3
Mississippi River:						
Saint Paul, Minn*..	14.5	.....	.....	.....	.....	.....
La Crosse, Wis*...	24.0	.....	.....	.....	.....	.....
Dubuque, Iowa*...	16.0	.....	.....	.....	.....	.....
Davenport, Iowa...	15.0	13	2.8	24	1.0	1.8
Keokuk, Iowa	14.0	16	2.9	26	0.3	2.6
Saint Louis, Mo ...	32.0	8	11.4	1	8.3	3.1
Cairo, Ill	40.0	17	41.8	7	33.1	8.7
Memphis, Tenn....	34.0	1, 2	34.1	9, 10	29.4	4.7
Vicksburg, Miss ...	41.0	28	46.2	1	42.0	4.2
New Orleans, La ..	13.0	27, 28	15.7	1	13.4	2.3
Ohio River:						
Pittsburgh, Pa.....	22.0	21	18.8	14	6.7	12.1
Parkersburg, W.Va.	38.0	23	26.2	1	11.5	14.7
Cincinnati, Ohio ...	50.0	28	55.7	1	22.3	33.5
Louisville, Ky.....	25.0	28	32.6	1	9.9	22.7
Cumberland River:						
Nashville, Tenn ...	40.0	28	43.4	23	12.6	30.8
Tennessee River:						
Chattanooga, Tenn .	33.0	28	34.8	22	7.1	27.7
Knoxville, Tenn ...	29.0	28	23.0	6	1.4	21.6
Monongahela River:						
Pittsburgh, Pa.....	29.0	21	18.8	14	6.7	12.1
Savannah River:						
Augusta, Ga.....	32.0	28	21.9	8	7.2	14.7
Willamette River:						
Portland, Oregon ..	15.0	5	28.7	28	1.3	27.4

*Frozen.

The above table shows that the Mississippi River was 1.8 foot above the danger point at Cairo, Ill., on the 17th; 0.1 foot above at Memphis, Tenn., on the 1st and 2d; 5.2 feet above at Vicksburg, Miss., on the 28th; and 2.7 feet above at

New Orleans, La., on the 27th and 28th. The Ohio River was 5.7 feet above the danger point at Cincinnati, Ohio, on the 28th, and 7.6 feet above at Louisville, Ky., on the same date. The Cumberland River was 3.4 feet above the danger point at Nashville, Tenn., on the 28th. The Tennessee River was 1.8 foot above the danger point at Chattanooga, Tenn., on the 28th. The Willamette River was 13.7 feet above the danger point at Portland, Oregon, on the 5th.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Sault de Ste. Marie, Mich., 14th: an auroral display was observed at 9.40 p. m., consisting of a well-defined arch of yellowish light which rose to about altitude 40°. The arch extended between north and northeast, and the maximum brilliancy of the aurora occurred at 10.50 p. m., after which the arch gradually disappeared, and at 11.20 p. m. the display had entirely vanished.

Marquette, Mich., 14th: an auroral display, consisting of a dark segment which rose about twenty-five degrees above the horizon, and also of an arch of pure white light which extended from northwest to northeast, was observed in the evening.

Auroras were observed during the month as follows: 1st, Orono, Me. 6th, Wapeton, N. Dak. 11th, Cresco, Iowa; Eastport and Orono, Me.; Leech Farm, N. Dak.; Webster, S. Dak. 13th, Orono, Me. 14th, Cresco, Iowa; Marquette and Sault de Ste. Marie, Mich.; Leech Farm, N. Dak.; Greenwood, Wis. 15th, Lewiston, Pa. 18th, Manitowoc, Wis. 20th, Montevideo, Minn.

THUNDER-STORMS.

The more severe thunder-storms of the month are described under "Local storms". East of the Rocky Mountains thunder-storms were reported in the greatest number of states and territories, twenty-four, on the 25th; in twenty on the 24th; in sixteen on the 26th; in fifteen on the 18th; in fourteen on the 19th and 28th; in from five to eleven, inclusive, on the 3d, 4th, 6th, 7th, 8th, 13th, 14th, 17th, 20th, 23d, and 27th; and in from one to three, inclusive, on the 1st, 2d, 9th to 12th, 21st, 22d. The 5th, 15th, and 16th were the only dates on which no thunder-storms were reported east of the Rocky Mountains.

East of the Rocky Mountains thunder-storms were reported on the greatest number of dates, twelve, in Louisiana, Mississippi, Pennsylvania, and Texas; on eleven dates in Tennessee; on ten dates in Alabama, Arkansas, and Illinois; on from five to nine dates, inclusive, in Florida, Georgia, Indiana, Kentucky, Maryland, Michigan, Missouri, New Jersey, New York, North Carolina, Ohio, South Carolina, Virginia, and West Virginia; and on one or two dates in Connecticut, District of Columbia, Indian Territory, Iowa, Kansas, Massachusetts, Minnesota, Rhode Island, and Wisconsin. In states and territories east of the Rocky Mountains other than those named, no thunder-storms were reported. The only states west of the Rocky Mountains reporting thunder-storms were: California, 16th and 19th; New Mexico, 6th and 26th; and Utah 26th.

MISCELLANEOUS PHENOMENA.

HALOS.

Solar and lunar halos were reported in New England and the middle Atlantic states on twenty-five dates. On twenty-four dates rain or snow fell in that region on the dates for which halos were reported; on twenty-two dates on the second day; and on twenty dates on the third day following the halos. In the south Atlantic states halos were reported on fifteen dates. On thirteen dates rain fell on the dates for which halos were reported; on ten dates on the second day; and on eight dates on the third day following the halos. In the Lake region halos were reported for twenty-two dates. On nineteen dates rain or snow fell on the dates for which halos were reported; on seventeen dates on the second day; and on fifteen dates on the third following the halos. In the Mississippi and Ohio valleys halos were reported on twenty-three dates. On eighteen dates rain or snow fell on dates for which the halos were reported; on seventeen dates on the second day; and on seventeen dates on the third day following the halos. In the Gulf states halos were reported on eight dates. On eight dates rain fell on the dates for which the halos were reported; on five dates on the second day; and on seven dates on the third day following the halos. In the Rocky Mountain and plateau regions halos were reported on eight dates. On six dates rain or snow fell on the days for which the halos were reported; on six dates on the second day; and on six dates on the third day following the halos. In the Missouri Valley halos were reported on twenty dates. On sixteen dates rain or snow fell on the days for which halos were reported; on thirteen dates on the second day; and on ten dates on the third day following the halos. On the Pacific coast halos were reported on seventeen dates. On fourteen dates rain fell on the dates for which halos were reported; on fourteen dates on the second day; and on fourteen dates on the third day following the halos.

The above statement shows that in New England and the middle Atlantic states 96 per cent. of the halos were attended by rain or snow in the regions referred to on the same date; 89 per cent. were followed on the second day, and 89 per cent. on the third day by rain or snow. In the south Atlantic states 87 per cent. of the halos were attended by rain on the same date; 67 per cent. were followed on the second day, and 53 per cent. on the third day by rain. In the Lake region 86 per cent. of the halos were attended by rain or snow on the same day; 77 per cent. were followed on the second day, and 68 per cent. on the third day by rain or snow. In the Mississippi and Ohio valleys 78 per cent. of the halos were attended by rain or snow on the same day, and 74 per cent. were followed on the second and third days by rain or snow. In the Gulf States 100 per cent. of the halos were attended by rain on the first day; 63 per cent. were followed on the second day, and 87 per cent. on the third day by rain. In the Rocky Mountain and plateau regions 78 per cent. of the halos were attended by rain or snow on the same day, and 78 per cent. were followed on the second and third days by rain or snow. In the Missouri Valley 80 per cent. of the halos were attended by rain or snow on the same day; 65 per cent. were followed on the second day, and 50 per cent. on the third day by rain or snow. On the Pacific coast 82 per cent. of the halos were attended by rain or snow on the same day, and 82 per cent. were followed on the second and third days by rain or snow. It is also shown that in New England and the middle Atlantic states 64 per cent. of the halos occurred in the eastern quadrants of low pressure storms, and 36 per cent. following the passage of areas of low pressure or within areas of high pressure. In the south Atlantic states 53 per cent. of the halos occurred in the eastern quadrants and 47 per cent. in the western quadrants of low pressure storms. In the Lake region 59 per cent. of the halos occurred in the eastern quadrants and 41 per cent. in the western quadrants of low pressure storms. In the Mississippi and Ohio valleys 56 per cent. of the halos occurred in the eastern quadrants and 44 per cent.

in the western quadrants of low pressure storms. In the Gulf States 87 per cent. of the halos occurred in the eastern quadrants and 13 per cent. in the western quadrants of low pressure storms. In the Rocky Mountain and plateau regions 37 per cent. of the halos occurred in the eastern quadrants and 63 per cent. in the western quadrants of low pressure storms. In the Missouri Valley 65 per cent. of the halos occurred in the eastern quadrants, and 35 per cent. in the western quadrants of low pressure storms. On the Pacific coast 24 per cent. of the halos occurred in the eastern quadrants, and 76 per cent. in the western quadrants of low pressure storms.

From the above it appears that during February, 1890, halos occurred within the influence of low pressure storms or attending the disturbed atmospheric conditions that attended the passage of general storms; 86 per cent. of the halos were attended by rain on the same day. In regions east of the Rocky Mountains 64 per cent. of the halos were noted in the eastern quadrants, and 36 per cent. of the halos were noted to the westward of low pressure storms. In the Rocky Mountain and plateau regions but 31 per cent. of the halos were noted in the eastern quadrants of low pressure storms, and 69 per cent. of the halos reported in those regions occurred attending or following the passage of low pressure storms over the Rocky Mountain and plateau regions.

PARHELIA.

Milwaukee, Wis.: well defined parhelia were observed from noon to 3 p. m., 16th. They were brightest at 2 p. m., the sky being partly covered with cirro-stratus clouds, with haze in the upper atmosphere. Four mock suns were well defined, two on each side of the sun. The largest circle, which passed through the sun and reached to within 30° of the northern horizon, was of a whitish light, very bright, and well defined. The other circles exhibited the prismatic hues, the red on the inside or towards the sun. Mock suns were also observed at 6.20 p. m., 28th, when the sun was several degrees above the western horizon. On a line with the sun, and on each side, north and south, equally distant about 20° from the sun, were very bright spots exhibiting prismatic colors, with the red tint towards the sun. The western sky was covered at the time with broken masses of stratus and cirro-stratus clouds. On the morning of the 16th a low pressure storm of slight energy was central over the northern part of the Lake region and low pressure storms were central on the evening of that date, one over Iowa and the other over Kansas. No rain fell in the Lake region on the 16th, but was general in that section on the 17th and 18th. On the 28th a low pressure storm of considerable energy moved northeastward from the lower lake region.

Era, Idaho: on the morning of the 25th the atmosphere was filled with floating particles of frost, and as the sun rose two fan-shaped sun-dogs appeared, one on each side of the sun. They were of unusual brilliancy, the one in the north being much the brighter. The colors of the rainbow were displayed with sparkling brilliancy, and coruscating streamers were thrown out, causing the display to resemble a miniature aurora borealis. Before the sun-dogs disappeared a half circle, lying horizontally in the heavens with the bow towards the sun, was formed; its colors were of dazzling brilliancy, and sparks were apparently thrown off similar to those caused by electricity. The display lasted about one hour, and appeared again in the evening when it was less brilliant. During the 25th a low pressure storm appeared over the middle plateau region southeast of Idaho, and general rain prevailed over the eastern part of the middle plateau region on the 25th, 26th, and 27th, no general rain being reported on those dates in Idaho.

METEORS.

Brilliant meteors were reported as follows: 4th, Granbury, Tex; 11th, Green Bay, Wis.; 27th, Southport, N. C. Meteors were also reported as follows: 1st, Monticello, Iowa. 4th, Wilmington, N. C.; Eagle's Mere, Pa. 5th, Leicester, Mass. 9th, Nashville, Tenn. 12th, Vevay, Ind.; Wedgwood, N. Y. 13th, Villa City, Fla.; Beverly, N. J. 16th, Beaver, Utah. 18th, Wilmington, N. C. 21st, Cockrell, Ill.; Meridian, Miss. 26th, State College, Pa.

MIRAGE.

Mirage were observed during the month as follows: 1st, Tribune, Kans. 2d, Tribune, Kans.; Fort Maginnis, Mont. 3d, Hampton, Iowa; Spearfish, S. Dak. 8th, Spearfish, S. Dak. 12th, 15th, 16th, and 18th, Tribune Kans. 22d, Scranton, S. Dak. 28th, Webster and Woonsocket, S. Dak.

Spearfish, S. Dak.: a very fine mirage was observed to the north and northwest of this place at 8 a. m., 3d. High lands along the Belle Fouch for thirty miles or more were raised into plain view, and appeared about two or three miles distant.

SUN SPOTS.

Haverford College Observatory, Pa. (observed by Prof. F. P. Leavenworth):

Date.	Number of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Faculæ.	Definition.
	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	
Feb., 1890.										
4, 12 m.....	0	0	0	0	0	0	0	0	0	Fair; clouds.
5, 9 a. m ...	0	0	0	0	0	0	0	0	0	Poor; through clouds.
6, 12 m.....	0	0	0	0	0	0	0	0	0	Fair.
7, 10 a. m ...	0	0	0	0	0	0	0	0	0	Very poor; through clouds.
9, 9 a. m ...	0	0	0	0	0	0	0	0	4	Fair.
10, 10 a. m ...	0	0	0	0	0	0	0	0	0	Fair.
11, 2 p. m ...	0	0	0	0	0	0	0	0	0	Fair.
12, 11 a. m ...	0	0	0	0	0	0	0	0	6	Good.
13, 10 a. m ...	0	0	0	0	0	0	0	0	12	Good.
14, 4 p. m ...	0	0	0	0	0	0	0	0	3	Fair.
15, 10 a. m ...	0	0	0	0	0	0	0	0	7	Fair.
16, 12 m.....	0	0	0	0	0	0	0	0	1	Very poor.
17, 10 a. m ...	0	0	0	0	0	0	0	0	6	Fair.
18, 10 a. m ...	0	0	0	0	0	0	0	0	0	Very poor; through clouds.
20, 4 p. m ...	0	0	0	0	0	0	0	0	0	Poor.
21, 10 a. m ...	0	0	0	0	0	0	0	0	5	Fair.
22, 11 a. m ...	0	0	0	0	0	0	0	0	0	Poor.
26, 10 a. m ...	0	0	0	0	0	0	0	0	6	Fair.

Mr. C. E. Buzzell, Leaf River, Ill: solar observations were made only upon sixteen days during February, 1890. The group of January was seen February 1st, and it was the only one noted during the month. Prominent faculæ were seen on west limb on 15th.

Mr. M. A. Veeder, Lyons, N. Y.: no spots were seen during the month. Faculæ appeared by rotation on the 2d and 15th. Observations were poor or lacking on the 1st, 3d, 4th, 5th, 7th, 9th, 10th, 12th, 14th, 17th to 28th.

Mr. John W. James, Riley, Ill., and Mr. H. D. Gowey, North Lewisburgh, Ohio, report that no sun spots were seen during the month.

VERIFICATIONS.

FORECASTS FOR 24 HOURS IN ADVANCE.

[Verifications made by Assistant Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Division.]

The forecasts for districts east of the Rocky Mountains for Febuary, 1890, were made by 2d Lieutenant W. A. Glassford, Signal Corps, and those for the Pacific coast districts were made at San Francisco, Cal., by 2d Lieutenant J. E. Maxfield, Signal Corps.

Percentages of forecasts verified, February, 1890.

States.		States.	
Maine	81.1	Kentucky	85.6
New Hampshire	82.0	Ohio	82.9
Vermont	81.2	West Virginia	81.1
Massachusetts	79.6	Indiana	79.5
Rhode Island	84.9	Illinois	86.9
Connecticut	83.6	Lower Michigan	86.9
Eastern New York	87.6	Upper Michigan	79.6
Western New York	87.4	Wisconsin	80.6
Eastern Pennsylvania	86.2	Minnesota	82.2
Western Pennsylvania	81.4	Iowa	85.1
New Jersey	85.4	Kansas	81.1
Delaware	85.5	Nebraska	80.6
Maryland	84.7	Missouri	79.6
District of Columbia	82.7	Colorado	79.3
Virginia	84.0	North Dakota	83.4
North Carolina	82.1	South Dakota	82.2
South Carolina	86.6	Southern California*	89.7
Georgia	87.0	Northern California*	88.9
Eastern Florida	89.4	Oregon*	77.1
Western Florida	89.6	Washington*	84.2
Alabama	84.5	*By elements:* Weather	85.2
Mississippi	87.3	Temperature†	83.2
Louisiana	87.3	Monthly percentage of weather and temperature combined‡	84.0
Texas	86.3		
Arkansas	83.3		
Tennessee	89.5		

*In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. †The forecasts of temperature in districts east of the Rocky Mountains for February, 1890, were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day. ‡The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10.

FORECASTS FOR 48 AND 72 HOURS IN ADVANCE.

Appreciating the great importance that long time predictions possess for the general public the Chief Signal Officer has authorized forecasts for forty-eight and seventy-two hours, covering the second and third days in advance. Such forecasts are optional with the predicting officer, and are only made when clearly in the public interest, and cover, in all cases, considerable areas of country, and are not confined to localities.

Percentages of verifications of forecasts made for second day in advance. Number of predictions made: weather, 50; temperature, 44. Percentages of verifications: weather, 63.2; temperature, 84.3. Weather and temperature combined, 71.0. For third day in advance. Number of predictions made: weather, 7; temperature, 7. Percentages of verifications: weather, 100.0; temperature, 14.3; weather and temperature combined, 65.7.

CAUTIONARY SIGNALS FOR FEBRUARY, 1890.

Statement showing percentages of justifications of wind signals for the month of February, 1890:

Wind signals.—(Ordered by Lieutenant W. A. Glassford.) Total number of signals ordered, one hundred and ten; justified as to velocity, wholly, seventy-six, partly, seven; justified as to direction, one hundred and seven. Of the signals ordered, sixty-three were cautionary, of which forty were wholly, and three were partly justified, and forty-seven were storm signals, of which thirty-six were wholly, and four partly justified. Twenty-eight signals were ordered for easterly winds, of which twenty-seven were justified, and eighty-two were ordered for westerly winds, of which eighty were justified. Percentage of justifications, 75.5.

Cold-wave signals.—(Ordered by Assistant Professor T. Russell.) Total number of signals ordered, four hundred and twelve; justified, two hundred and twenty-three. Percentage of justifications, 54.1.

Percentages of local verifications of weather and temperature signals reported by directors of the various State Weather Services for February, 1890.

States.	Weather.	Temperature.	States.	Weather.	Temperature.
Illinois	74.4	80.3	Nebraska	87.7	88.3
Indiana	84.0	82.0	New Jersey	82.0	86.2
Kansas	83.1	82.4	Ohio	79.0	82.0
Michigan	83.6	76.2	Oregon	80.0	85.0
Minnesota	72.0	78.0	Pennsylvania	79.0	78.0
Missouri	77.0	79.0	South Carolina	88.9	87.0

STATE WEATHER SERVICES.

[*Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.*]

The following extracts and summaries are republished from reports for February, 1890, of the directors of the various state weather services:

ALABAMA.

Temperature.—The average temperature was 10 above the normal. Highest monthly mean, 61.4, at Mobile; lowest monthly mean, 47.9, at Guntersville; maximum, 84, at Butler, 26th and 27th; minimum, 24, at Double Springs, 9th; greatest local monthly range, 54, at Butler, Fayette, and Tuscumbia; least local monthly range, 21, at Guntersville.

Precipitation.—The average precipitation for the state was 2.14 above the normal; greatest monthly, 12.10, at Fayette; least monthly, 2.06, at Bermuda.

Wind.—Prevailing direction, south.—*P. H. Mell, Signal Corps, Auburn, director.*

ARKANSAS.

Temperature.—The mean temperature was 6.9 above that of the same month last year; highest monthly mean, 57.0, at Texarkana; lowest monthly mean, 44.3, at Lead Hill; maximum, 81, at Lead Hill, 24th; minimum, —4, at Winslow, 28th; greatest local monthly range, 76, at Lead Hill, Pine Bluff, and Winslow; least local monthly range, 50, at Little Rock.

Precipitation.—The average precipitation for the state was 4.36 above the average of last year. Greatest monthly, 11.08, at Conway; least monthly, 4.95, at Dallas.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; W. U. Simons, Sergeant, Signal Corps, assistant.*

COLORADO.

Temperature.—The monthly mean was 3 above the average for the last three years. Highest monthly mean, 38.0, at Durango; lowest monthly mean, 13.0, at Climax; maximum, 80, at Lamar and Las Animas, 4th; minimum, —27, at Breckenridge, 28th; greatest local monthly range, 100, at Breckenridge; least local monthly range, 49, at Rifle Falls.

Precipitation.—The average for the state was somewhat in excess of the average of the last three years; greatest monthly, 4.40, at Aspen; least monthly, 0.03, at Wigwam and Fort Morgan.

Wind.—Prevailing direction, west.—*Prof. F. H. Loud, Colorado Springs, director; W. S. Miller, Corporal, Signal Corps, assistant.*

ILLINOIS.

Temperature.—The mean for the month was 5.9 above the normal of the past fifteen years; highest monthly mean, 44.0, at Golconda; lowest monthly mean, 29.5, at Sycamore; maximum, 78, at Jordan's Grove, 17th; minimum, zero, at Riley and Quincy, 21st and 28th; greatest local monthly range, 70, at Collinsville, Jordan's Grove, and White Hall.

Precipitation—The average for the month was 0.43 below the normal of the past twelve years; greatest monthly, 7.47, at Golconda; least monthly, 1.00, at Gibson City.

Wind.—Prevailing direction, northwest.—*John Craig, Sergeant, Signal Corps, Springfield, in charge.*

INDIANA.

Temperature.—Like the preceding months of this winter, February was warm throughout; highest monthly mean, 45.3, at Marengo; lowest monthly mean, 33.5, at Angola; maximum, 78, at Huntingburgh, 4th; minimum, 6, at La Fayette, 9th; greatest local monthly range, 60, at La Fayette; least local monthly range, 49, at Richmond and Angola.

Precipitation.—The average for the state was 1.65 in excess of the normal; greatest monthly, 12.12, at Huntingburgh; least monthly, 1.40, at Marion.

Wind.—Prevailing directions, southwest and northwest.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Sergeant, Signal Corps, assistant.*

KANSAS.

Temperature.—The temperature was generally above the normal, the excess for the state being 2.2; highest monthly mean, 39.2, at Oswego; lowest monthly mean, 23.9, at Allison; maximum, 89, at Richfield, 4th; minimum, —14, at Scott City, 27th; greatest local monthly range, 99, at Scott City; least local monthly range, 62, at Morse; greatest daily range, 49, at Weskan, 4th; least daily range, 3, at Leavenworth, 27th.

Precipitation.—The average for the state was 0.64 below the normal, the deficiency being general throughout the state, the average not being reached

anywhere; greatest monthly, 1.00, at Oswego and Manhattan; least monthly, 0.12, at Richfield.

Wind.—Prevailing direction, north.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Sergeant, Signal Corps, assistant.*

KENTUCKY.

Temperature.—The average for the state was 8 above the normal for February; maximum, 86, at Princeton, 11th; minimum, 16, at Ashland, 9th; greatest monthly range, 68, at Princeton; least monthly range, 45, at Millersburgh.

Precipitation.—The average for the state was 3.50 in excess of the normal; greatest monthly, 12.50, at Bowling Green; least monthly, 2.47, at South Fork. Snow storms were quite general on the 22d and 23d.

Wind.—Prevailing direction, south.—*Dr. E. A. Grant, Louisville, director, Frank Burke, Sergeant, Signal Corps, assistant.*

LOUISIANA.

Temperature.—The average for the month was 8 above the normal; highest monthly mean, 66.3, at Port Eads; lowest monthly mean, 55.6, at Coushatta; maximum, 101, at Cameron, 25th; minimum, 20, at Farmerville and Lake Charles, 28th; greatest local monthly range, 70, at Cameron; least local monthly range, 31, at Jonesville.

Precipitation.—There was a general deficiency throughout the state; greatest monthly, 8.69, at Vidalia; least monthly, 1.82, at Mandeville.

Wind.—Prevailing direction, south.—*R. E. Kerkam, Sergeant, Signal Corps, New Orleans, in charge.*

MICHIGAN.

The features of the month were the continued high temperature, the light rainfall, and an almost total absence of snow in the southern half of the state.

Temperature.—The mean was 5.9 above the normal of fifteen years; highest monthly mean, 37.5, at Benton Harbor; lowest monthly mean, 13.3, at Atlantic; maximum, 66, at Benton Harbor, 4th; minimum, —11, at Sault de Ste. Marie, 19th; greatest local monthly range, 60, at Mottville; least local monthly range, 33, at Atlantic; greatest daily range, 36, at Alma, Ann Arbor, Marshall, and Olivet, 4th; least daily range, 1, at Ionia, 28th.

Precipitation.—The average was 0.82 below the average of fifteen years; greatest monthly, 5.17, at Marquette; least monthly, 0.77, at Flint.

Wind.—Prevailing directions, southwest and northwest.—*N. B. Conger, Sergeant, Signal Corps, Lansing, director.*

MINNESOTA.

Temperature.—The mean was about normal in the central counties, from 3 to 4 above the normal in the southern portion of the state, while in the extreme northwest there was a deficiency of 6 to 7; highest monthly mean, 23.8, at La Crosse, Wis.; lowest monthly mean, —3.7, at Saint Vincent; maximum, 53, at La Crosse, Wis., 4th; minimum, —36, at Saint Vincent, 26th, and at Pokegama Falls, 28th; greatest local monthly range, 78, at Pokegama Falls; least local monthly range, 58, at Farmington, and at La Crosse, Wis.; greatest daily range, 49, at Saint Vincent, 1st; least daily range, 4, at La Crosse, Wis., 17th.

Precipitation.—The precipitation reported from Saint Vincent was 50 per cent. in excess; all other stations having a record covering a long period of years report deficiencies; greatest monthly, 1.28, at Minneapolis; least monthly, 0.02, at Morris.

Wind.—Prevailing direction, northwest.—*John Healy, Private, Signal Corps, Saint Paul, in charge.*

MISSISSIPPI.

Temperature.—The mean was 7.4 above the normal; highest monthly mean, 66.6, at Macon; lowest monthly mean, 50.2, at Batesville; maximum, 87, at Vaiden, 3d; minimum, 22, at Booneville, 21st.

Precipitation.—The average was 2.11 above the normal for the month; greatest monthly; 12.11, at Rienzi; least monthly, 2.45, at Moss Point.

Wind.—Prevailing directions, south in the southern part of the state, and north in the northern.—*R. B. Fulton, Signal Corps, University, director.*

METEOROLOGICAL REPORT OF THE MISSOURI STATE BOARD OF AGRICULTURE.

Temperature.—Highest monthly mean, 44.6, at Cairo, Ill.; lowest monthly mean, 28.3, at Craig; maximum, 81, at Protem, 24th; minimum, —8, at Conception, 28th; greatest local monthly range, 78, at Springfield; least local monthly range, 57, at Cairo, Ill.

Precipitation.—Greatest monthly, 7.57, at Cairo, Ill.; least monthly, 0.32, at Hannibal.

Wind.—Prevailing direction, northwest.—*Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director; A. L. McRae, Sergeant, Signal Corps, assistant.*

NEBRASKA.

The month was generally warm, with little rain or snow.

Temperature.—The mean for southeastern Nebraska was about three degrees above the normal; the maximum, 74, occurred in the southern part of the state, and the minimum, —27, in the northern part; these extremes were higher and lower than our records show for any preceding February.

Precipitation.—Only one station, Valentine, reports over an inch of precipitation; a strip extending through the northern and northeastern parts of the state had over half an inch, while along the southern border there was generally but a trace.

Wind.—Prevailing direction, northwest.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Sergeant, Signal Corps, assistant.*

NEVADA.

February has been exceptionally cold and stormy throughout the state.

Temperature.—The mean temperature was 3.8 below the normal; maximum; 88.2, at El Dorado Canyon, 5th; minimum, —41, at Elko, 27th; highest monthly mean, 55.8, at El Dorado Canyon; lowest monthly mean, 20.2, at Ruby Hill; greatest local monthly range, 99, at Elko; least local monthly range, 47.5, at Palmetto; greatest mean daily range, 32.3, at Elko; least mean daily range, 15.8, at Palisade.

Precipitation.—The average was 0.66 above the normal; greatest monthly, 4.80, at Ruby Hill; least monthly, trace, at Gold Mountain.

Wind.—Prevailing direction, south.—*Prof. Chas. W. Friend, Carson City, director; H. E. Wilkinson, Corporal, Signal Corps, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

The abnormal warmth of the winter season continued through this month, when the departure from the normal temperature was +5.2, which was almost as great as in January, +5.4, and in December, +6.3. The precipitation was close to the normal, but the snowfall was deficient.

Temperature.—Highest monthly mean, 37, at Block Island; lowest monthly mean, 18.8, at Kent's Hill; maximum, 70, at Olneyville, 5th; minimum, —20, at West Milan, 23d; greatest local monthly range, 74, at West Milan; least local monthly range, 43, at Nantucket; greatest daily range, 52, at Stratford, 11th; least daily range, 0, at Lunenburgh and Weathersfield Centre, 28th.

Precipitation.—Greatest monthly, 6.13, at Jacksonville; least monthly, 1.50, at Block Island.

Wind.—Prevailing direction, northwest.—*Prof. William H. Niles, Boston Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; L. G. Schultz, Sergeant, Signal Corps, assistant.*

NEW JERSEY.

Temperature.—The mean was 8.4 above the normal; highest monthly mean, 44.1, at Cape May C. H.; lowest monthly mean, 36. at Tenafly; maximum, 76, at Beverly, 18th; minimum, 14, at Gillette and Junction, 14th and 21st, respectively; greatest local monthly range, 57, at Beverly; least local monthly range, 44, at Billingsport, Ocean City, and Tenafly; greatest daily range, 40, at New York City, 7th; least daily range, 0.2, at Readington, Union, Billingsport and Newark, on the 1st, 4th, 6th. and 28th, respectively.

Precipitation.—The average was 0.79 above the normal; greatest, 5.32, at South Orange; least, 2.43, at Atlantic City.

Wind.—Prevailing directions, northwest and southwest.—*E. W. McGann, Sergeant, Signal Corps, New Brunswick, in charge.*

NEW YORK.

Temperature.—The temperature was above the normal throughout the state excepting at Plattsburgh and Madison Barracks, where it was below; maximum, 70, at South Kortright, 26th; minimum, —16, at Number Four, 22d; greatest local monthly range, 68, at South Kortright, Sacketts Harbor, and Madison Barracks; least local monthly range, 43, at Fort Niagara.

Precipitation.—The rainfall was generally above the average, excepting at Albany, Alfred Centre, Palermo, Setauket, and White Plains, where deficiencies are reported.

Wind.—Prevailing direction, northwest.—*Prof. E. A. Fuertes, Ithaca, director; I. W. Brewer, Private, Signal Corps. assistant.*

NORTH CAROLINA.

Temperature.—The mean was 7 above the normal; highest monthly mean, 58.4, at Wilmington; lowest monthly mean, 43.0, at Highlands; maximum, 82, at Washington, 25th; minimum, 11, at Highlands, 10th; greatest local monthly range, 57, at Marion, Va., Highlands, and Douglas; least local monthly range, 34, at Hatteras.

Precipitation.—The average was 0.25 below the normal. The rainfall was considerably in excess in the western portion of the state, and deficient in the central and eastern portions; greatest monthly, 9.23, at Highlands; least monthly, 1.58, at Weldon.

Wind.—Prevailing direction, southwest.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann. Sergeant, Signal Corps. assistant.*

NORTH AND SOUTH DAKOTA.

Temperature.—The mean temperature was 3 below the normal; highest monthly mean, 22.5, at Rapid City, S. Dak.; lowest monthly mean, —1.1, at Gallatin, N. Dak.; maximum, 66, at Rapid City, S. Dak., 12th; minimum, —43, at Fort Buford, N. Dak., 26th; greatest local monthly range, 93, at Rapid City, S. Dak.; least local monthly range, 70, at Alexandria, S. Dak.

Precipitation.—The mean was about 0.26 below the normal; greatest monthly, 0.75, at Spearfish, S. Dak.; least monthly, trace, at Clark, S. Dak.

Wind.—Prevailing direction, northwest.—*S. W. Glenn, Sergeant, Signal Corps, Huron, in charge.*

OHIO.

Temperature.—This was the warmest February on record in the bureau. The mean temperature was 9.2 above the eight-year average, and 4.5 above the mean of 1887, the highest previously recorded; maximum, 73, at Hanging Rock, 4th; minimum, 5, at Wauseon, 9th. This is the only February since the opening of the bureau in 1882 that minimum temperature below zero has not been reported. Greatest daily range, 46, at Logan, 17th; least daily range, 2, at Cleveland, 9th.

Precipitation.—The mean was 1.43 above the average for February; greatest monthly, 7.22, at Hanging Rock; least monthly, 2.90, at Toledo.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; Lieut. Charles E. Kilbourne, secretary; C. M. Strong, Corporal, Signal Corps, assistant.*

OREGON.

The month was marked by extremely low temperature in the latter part, excessive precipitation in the first part, and floods in the Willamette, Umpqua, and Rogue rivers during the first eight days.

Temperature.—The mean was 2.7 below the normal; maximum, 67, at Toledo; minimum, —30, at Silver Lake.

Precipitation.—The average was 3.00 above the normal; greatest monthly, 23.68, at Ellensburgh; least monthly, 1.38, at Heppner. Snow fell in all sections of the state, from trace in the central portion of Willamette Valley to 28 inches at Joseph.

Wind.—Prevailing direction, southwest.—*Hon. H. E. Hayes, Master State Grange, Oswego, director; B. S. Pague, Sergeant, Signal Corps, assistant.*

PENNSYLVANIA.

Temperature.—The mean was about 8 above the normal, and 14 above that of the corresponding month of 1889; highest monthly mean, 42.1, at Uniontown; lowest monthly mean, 30.2, at Dyberry; maximum, 79, at New Bloomfield, 26th; minimum, zero, at Dyberry, 23d; greatest daily range, 42, at Dyberry and Honesdale, 23d; least daily range, 2, at Le Roy, 19th, Rimersburgh, 15th, Annville, 4th, and Columbus, 12th.

Precipitation.—The average was nearly normal, and its distribution was even throughout the state.

Wind.—Prevailing direction, west.—*Under direction of the Franklin Institute, Philadelphia; T. F. Townsend, Sergeant, Signal Corps, assistant.*

SOUTH CAROLINA.

Temperature.—Highest monthly mean, 61.4, at Hardeeville; lowest monthly mean, 52.2, at Spartanburgh; maximum, 83, at Hardeeville, 25th and 26th; minimum, 21, at Spartanburgh, 21st; greatest local monthly range, 35, at Port Royal.

Precipitation.—The rainfall was a little less than the normal; greatest monthly, 6.03, at Walhalla; least monthly, 0.85, at Conway.

Wind.—Prevailing direction, southwest.—*Hon. A. P. Butler, Columbia, director; J. W. Cronk, Private, Signal Corps, assistant.*

TENNESSEE.

The month was characterized by many abnormal meteorological features, the principal of which were the high winds, the great amount of precipitation, and the high temperature.

Temperature.—The mean was 7.5 above the normal, and it is the highest mean during the past seven years; highest monthly mean, 52, at Chattanooga; lowest monthly mean, 47, at Riddleton, Rugby, and Trenton; maximum, 79, at Memphis, 24th; minimum, 18, at Hohenwald, 9th; greatest local monthly range, 60, at Hohenwald; least local monthly range, 42, at Rogersville; greatest daily range, 38, at Springdale, Hohenwald, and Riddleton, 11th, 16th, and 28th, respectively; least daily range, 3, at Memphis, 6th and 8th, Greeneville and Florence Station, 6th, Fayetteville, 7th, and Lawrenceburgh, 8th.

Precipitation.—The precipitation was nearly 4.00 in excess of the normal of the past seven years, and it was the greatest February average in that time; greatest monthly, 15.75, at Lawrenceburgh; least monthly, 6.40, at Cog Hill.

Wind.—Prevailing directions, south and southwest.—*J. D. Plunket, M. D., Nashville, director; H. C. Bate, Signal Corps, assistant.*

TEXAS.

Temperature.—The month was warm from the 1st to the 27th, and the mean temperature was considerably in excess of the normal; highest monthly mean, 64.0, at Corpus Christi; lowest monthly mean, 39.3, at Panhandle; maximum, 89, at Brownsville, 27th; minimum, —2, at Panhandle, 28th; greatest local monthly range, 79, at Panhandle; least local monthly range, 36, at Houston.

Precipitation.—The precipitation was nearly normal, except east of the ninety-seventh meridian, where it was from 2.00 to 5.00 in excess; greatest monthly, 12.85, at Longview; least monthly, 0.02, at El Paso.—*D. D. Bryan, Galveston, director; I. M. Cline, Sergeant, Signal Corps, assistant.*

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, February, 1890.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alabama.	°	°	°	*Ins.*
Bermuda *†	81	31	59.7	1.21
Citronelle	83	33	64.0	4.28
Columbiana †	79	26	56.5	9.44
Decatur (1) †	.....	.....	.....	9.42
Decatur (2)†	.....	.....	.....	8.54
Double Springs *	77	24	55.3	11.42
Evergreen †	.....	.....	.....	5.11
Livingston (1)	81	31	57.7	6.72
Mt. Vernon B'ks	82	31	61.0	4.35
Pine Apple†	.....	.....	.....	1.49
Valley Head †	76	24	50.8	11.61
Wiggins	83	33	61.2	7.97
Alaska.				
Juneau	38	— 2	22.4	6.55
Arizona.				
Ash Creek	.....	.....	.....	0.28
Ash Springs	60	33	47.8	0.53
Banghart's*	69	18	42.6	1.00
Benson *	75	27	48.5	0.00
Bisbee	.....	.....	.....	0.20
Casa Grande*	84	40	56.1	0.61
Cooley's Springs†	.....	.....	.....	2.79
Dragoon	.....	.....	.....	0.43
Eagle Pass	.....	22	38.8	0.51
Fort Apache	80	11	41.2	1.92
Fort Bowie	72	21	49.4	0.22
Fort Huachuca	64	21	43.8	0.10
Fort Grant	74	22	48.4	0.46
Fort Lowell	87	21	52.4	0.55
Fort McDowell	89	25	54.2	1.33
Fort Mojave	80	30	52.8	1.10
Gila Bend*	66	34	55.9	0.40

Meterological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Arizona—Cont'd.	°	°	°	*Ins.*
Holbrook	74	9	41.0	0.25
Lochiel *	74	22	46.0	0.43
Maricopa*	83	34	58.6	0.22
Natural Bridge	.....	.....	.....	3.50
Pantano *	78	32	50.7	0.75
Sachse's Ranch	.....	.....	.....	0.00
San Carlos	88	18	51.0	1.40
San Simon	96	30	55.0	T.
Show Low	.....	.....	.....	3.10
Signal †	79	27	51.4	1.31
Teviston	.....	.....	.....	T.
Texas Hill *	89	22	47.8	0.40
Tip Top †	.....	.....	.....	6.06
Tucson (1)†	79	26	51.9	0.76
Tucson (2)*	63	43	51.6	0.10
Volunteer Springs	75	—27	20.7	2.20
Walnut Grove	.....	.....	.....	4.50
Walnut Ranch	.....	.....	.....	0.08
Wilcox*	82	25	51.8	.....
Willow Springs	.....	.....	.....	1.74
Yuma*	90	42	57.3	0.86
Arkansas.				
Arkansas City †	.....	.....	.....	5.58
Camden †	78	24	54.0	6.54
Conway	78	20	50.4	11.08
Dallas	79	8	.....	4.95
Dardanelle	.....	.....	.....	10.23
Forrest City †	76	26	54.3	7.09
Fulton†	.....	.....	.....	5.75
Harrisburgh	74	20	47.4	8.47
Helena (1) †	.....	.....	.....	9.30
Hot Springs	78	26	53.2	5.91
Lead Hill	81	5	44.3	5.32
Little Rock B'ks	79	20	52.4	6.42
Lonoke	77	22	53.8	6.20
Monticello	76	20	51.0	5.10
Newport (1)†	.....	.....	.....	12.59
Osceola	79	28	49.2	7.73
Ozone †	70	7	44.7	7.40
Pine Bluff †	80	24	53.5	8.35
Stuttgart †	79	21	51.0	7.17
Texarkana †	80	10	57.0	5.82
Washington †	78	19	51.3	6.09
Winslow*†	72	— 4	45.1	5.01
California.				
Alcade *	68	33	48.6	5.93
Alcatras Island	62	36	47.6	4.42
Almaden*	72	28	48.8	5.92
Anaheim*	80	34	58.3	1.54
Anderson	67	26	46.2	5.93
Angel Island	67	31	48.3	4.07
Antioch *	68	35	48.0	2.97
Aptos *	68	28	49.0	4.60
Arcata	.....	.....	.....	14.78
Athlone *	76	34	50.2	1.19
Auburn *	70	24	44.0	3.96
Bakersfield *	67	33	49.2	0.16
Barstow †	77	23	47.6	0.15
Beaumont	68	24	47.7	4.74
Belmont *	65	31	48.4	.....
Benicia Barracks	67	29	46.9	4.85
Berendo *	68	30	49.1	0.73
Berkeley	61	32	46.1	5.70
Bishop Creek*	72	21	41.4	0.30
Boca *	60	—26	27.2	5.40
Boulder Creek	70	26	46.0	10.62
Brentwood*	67	35	53.7	3.35
Brighton*	72	32	50.7	2.06
Byron*	63	30	49.7	2.35
Cactus*	99	49	65.2	0.55
Caliente *	70	33	48.2	1.15
Calistoga *	65	24	43.5	4.78
Castroville*	65	33	48.7	3.33
Centreville *	74	40	52.1	3.63
Chico *	66	28	46.3	2.51
Cisco *	40	10	29.9	14.90
Colegrove	.....	.....	.....	1.33
Colfax *	68	24	42.3	8.00
Colton *	92	30	55.2	1.15
Corning*	78	28	49.1	2.28
Davisville *	72	31	50.7	3.69
Delano *	69	30	49.6	0.62
Delta	65	23	41.6	21.11
Downey *	82	40	57.2	1.51
Dunnigan *	68	33	47.4	3.62
El Dorado *	72	29	47.0	5.67
Elmira*	72	32	51.5	.....
El Verano *	66	28	47.0	5.84
Emigrant Gap *	48	22	33.3	9.80
Esperanza *	67	31	47.7	3.98
Evergreen	.....	.....	.....	4.86
Farmington*	73	28	48.6	1.87
Felton *	70	30	46.7	7.11
Fernando	85	29	52.5	2.72
Ferndale*	.....	24	43.9	10.77
Florence *	83	35	54.3	1.13
Folsom *	68	31	46.8	5.90
Fort Bidwell	51	—12	29.1	3.97
Fort Gaston	57	24	42.7	15.58
Fort Mason	61	35	48.4	4.47
Fresno *	74	30	54.2	0.65
Fruto *	68	30	48.3	1.94
Georgetown†	63	18	40.4	8.96
Gilroy *	68	28	47.7	5.62
Girard *	65	25	41.9	1.20
Glen Ellen*	75	24	47.4	7.49
Goshen *	70	28	46.9	1.13
Grass Valley	.....	.....	.....	8.27
Haywards *	63	32	45.0	3.99
Hollister *	85	30	55.6	2.15
Hornbrook*	58	10	30.6	9.91
Hydesville †	63	24	43.4	10.13
Indio *	98	30	60.8	0.06
Ione *	60	24	44.1	3.75
Iowa Hill*	67	22	40.8	10.74
Jolon	.....	.....	42.3	4.59
Keene *	65	28	42.6	1.97
Kingsburgh *	62	30	43.2	1.43
King City*	70	22	44.8	3.01
Knight's Landing*	66	36	52.9	4.18
La Grange *	70	20	45.9	3.77
Lathrop *	70	32	50.7	2.15
Laurel *	70	31	47.9	9.10
Lewis Creek	68	33	47.0	1.09
Livingston *	65	28	46.8	1.61
Long Beach	88	38	55.0	.....
Loomis	.....	.....	.....	4.91
Los Angeles*	82	35	53.4	1.49
Los Banos (1)*	68	30	48.0	1.03
Los Banos (2)	68	35	46.5	1.46
Los Gatos (2)	.....	.....	.....	7.83
Mammoth Tank *	84	41	59.0	0.54
Martines	59	28	45.7	6.00
Marysville	62	39	47.2	4.65
Mendocino	.....	.....	.....	6.98
Menlo Park*	65	30	47.8	3.27
Merced *	72	32	49.9	1.50
Modesto *	66	25	44.1	1.03
Mojave *	72	23	45.4	0.58
Montague *	58	24	38.5	6.05
Monterey *	60	32	47.9	2.67
Monterey * (Hotel del Monte)	68	28	48.7	.....
Mount Hamilton	61	18	36.8	6.60
Napa*	65	25	49.7	6.59
National City †	79	35	54.1	2.73
Newark *	66	34	50.6	3.34
Newhall	83	28	50.7	4.41
Newman *	68	34	48.1	3.25
Niles *	74	32	52.7	3.42
Norwalk *	82	36	53.1	1.08
Oakland (1)*	63	30	47.7	5.72
Oakland (2)*	66	32	49.2	5.45
Oakland (3)	.....	35	46.6	5.90
Orland *	68	30	48.9	1.63
Oroville	64	30	47.9	5.95
Pajaro *	70	30	48.4	5.11
Pasadena	77	29	51.2	2.83
Paso Robles *	66	23	44.0	5.40
Petaluma *	72	30	48.7	4.90
Placerville*	69	25	43.2	6.60
Puente *	79	35	52.0	2.70
Red Bluff *	85	33	49.4	3.28
Redding *	68	30	46.2	6.76
Rocklin *	70	35	49.3	3.01
Rumsey *	70	31	47.0	4.52
Sacramento (1)	68	25	43.3	4.02
Sacramento (2)*	64	34	48.4	2.95
Salinas (1) *	69 f	32	46.7d	3.03
Salinas (2)*	63	30	46.2	2.74
Salton *	84	30	57.3	.....
Sanger Junction*	72	30	50.0	1.48
San Ardo*	70	27	46.7	3.59
San Diego B'ks	78	39	54.7	2.11
San Gabriel *	81	34	51.8	1.77
San José *	68	32	48.7	3.64
San Mateo *	60	30	44.7	4.39
San Miguel*	67	28	46.7	3.13
San Pedro*	77	38	54.9	1.56
Santa Ana *	80	36	55.3	1.66
Santa Barbara (1)	86	34	52.6	2.96
Santa Barbara (2)*	69	40	52.4	3.38
Santa Clara *	68	32	49.4	3.35
Santa Cruz *	72	34	52.0	4.90
Santa Margarita*	63	23	38.6	7.72
Santa Maria	76	30	51.4	3.64
Santa Monica*	72	39	54.2	2.03
Santa Paula*	69	36	55.6	2.00
Santa Rosa*	66	28	46.9	4.74
Selma	64	29	48.2	0.94
Seven Palms*	87	42	60.3	0.10
Shingle Springs *	61	25	39.6	6.70
Sima*	57	16	38.1	18.30
Sisson *	47	2	34.7	9.33
Soledad *	74	26	46.8	2.53
Sonoma	.....	.....	.....	12.87
Soquel *	72	29	51.4	.....
South Side *	78	32	51.2	3.35
South Vallejo *	59	30	45.5	3.73
Spadra *	87	32	51.5	1.59
Steeles	74	33	50.0	4.66
Stockton (1)	.....	.....	.....	1.66
Stockton (2) *	66	31	50.2	.....
Summit *	35	25	28.2	11.60
Suisun City *	70	32	48.5	4.50
Susanville* †	54	—10	29.0	4.71
Tehachapi *	58	14	35.1	0.70
Tehama *	65	38	49.3	1.05
Templeton *	71	26	47.2	5.83
Towles *	56	16	36.7	.....

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.	°	°	°	*Ins.*
Tracy *	55	28	40.2	1.98
Traver *	90	30	50.8	1.10
Tropico *	82	36	50.9	.....
Truckee *	42	—22	25.1	8.90
Tulare *	67	33	50.6	0.74
Turlock *	72	32	50.1	1.18
Upper Mattole	73	26	47.5	20.36
Vacaville (1) *	70	31	47.7	5.71
Vacaville (2) *	70	30	46.6	5.49
Valley Springs *	74	33	44.8	3.62
Vina *	63	32	46.5	3.58
Volcano Springs *	89	38	58.7	0.68
Walla Walla Ck	48	3	31.7	9.10
Westley *	65	32	50.3	1.69
Wheatland	66	28	45.6	4.17
Whittier *	80	45	61.4	1.58
Williams *	55	33	41.8	2.90
Willow (1) †	69	26	46.6	3.70
Willow (2) *	68	30	47.4	1.98
Winters *	74	34	50.1	5.03
Woodland *	64	30	45.6	2.40
Colorado.				
Agate *	62	—16	26.4	0.50
Apishapa	78	— 2	33.6	0.20
Aspen	49	—12	23.2	4.40
Bennet	70	—10	23.7	0.62
Boulder Cañon	.....	.....	.....	0.48
Breckenridge	73	—27	27.1	1.40
Brush	.....	.....	.....	0.57
Byers *	74	— 8	30.6	0.15
Cañon City	79	— 9	36.8	0.20
Cheyenne Wells *	70	—10	32.9	0.25
Climax *	46	—26	13.0	2.51
Deer Trail *	64	— 8	24.9	0.30
Delta †	64	— 8	34.6	0.85
Denver (Jes. Col)	72	—11	32.2	0.17
Durango (1)	.....	.....	.....	0.46
Durango (2)	72	— 5	38.0	2.62
Eagle Farm	.....	.....	.....	0.23
Emma	.....	.....	.....	1.45
First View *	72	—10	30.7	0.15
Fort Collins	68	—20	30.0	0.21
Fort Crawford	56	—11	30.6	0.55
Fort Lewis	58	—16	27.9	2.30
Fort Logan	77	—11	33.3	0.08
Fort Morgan	.....	.....	.....	0.03
Fraser * †	.....	—24	12.8	2.55
Fruita	56	—14	33.4	0.93
Georgetown	57	— 6	28.2	0.82
Greeley	66	—16	25.8	0.25
Gunnison	50	—20	20.6	.....
Hardin	.....	.....	.....	0.05
Hugo *	70	0	40.0	.....
Husted	77	—15	32.4	0.13
Kit Carson	65	— 6	37.1	0.05
Kirk	.....	.....	.....	0.40
Lamar	80	— 5	35.0	0.16
Las Animas	80	—11	34.2	0.40
Leadville	50	—15	17.2	0.68
Magnolia *	68	— 2	29.1	0.72
Monte Vista	64	—10	27.4	0.12
Moraine *	54	—12	26.1	0.76
Parachute	.....	.....	.....	1.29
Peyton	.....	.....	.....	0.35
Rifle Falls *	49	0	28.3	2.66
River Bend	72	—13	33.5	.....
Rocky Ford	79	— 8	29.8	0.15
San Luis Ex. Sta	65	— 7	30.2	0.65
Sedgwick	.....	.....	.....	0.14
T. S. Ranch	58	— 5	34.1	0.90
Thon	70	—10	30.2	0.14
Vilas	.....	.....	.....	0.11
Villa Grove	.....	.....	.....	0.60
Watkins	77	— 8	31.8	0.80
Westcliffe	63	—15	29.0	0.50
Wigwam	.....	.....	.....	0.03
Connecticut.				
Canton	62	4	.....	4.39
Colchester	66	8	33.0	.....
Falls Village	.....	.....	.....	3.40
Fort Trumbull	65	12	36.7	2.25
Hartford (1)	68	8	35.2	3.91
Hartford (2)	.....	.....	.....	3.64
Lebanon	.....	.....	.....	3.24
Mansfield	64	5	31.4	3.28
Middletown	67	9	34.2	3.28
New Britain	.....	.....	.....	3.99
New Hartford (1) *	54	— 3	23.3	3.85
New Hartford (2)	.....	.....	.....	4.05
Shelton	65	11	34.5	4.03
Southington *	65	10	33.6	3.88
South Manchester	.....	.....	.....	3.27
Thompson	54	4	30.1	.....
Uncasville	.....	.....	.....	3.18
Voluntown *	62	9	34.8	2.59
Wallingford	.....	.....	.....	3.09
Waterbury	65	8	33.7	3.77
West Simsbury	.....	.....	.....	3.70
Delaware.				
Kirkwood *	.....	24	37.8	.....
District of Columbia.				
Kendall Green	69	22	41.2	.....
Washington B'ks	73	20	42.5	3.70
Florida.				
Altamonte Springs †	88	44	68.0	0.55
Florida—Cont'd.	°	°	°	*Ins.*
Alva †	91	45	66.9	0.69
Archer †	89	42	65.4	1.28
Fort Barrancas	79	36	63.7	2.40
Fort Meade *	86	44	68.8	1.35
Homeland	88	49	69.6	0.65
Hypoluxo	.....	59	70.0	6.37
Lake City †	87	42	65.5	0.68
Madison * †	80	47	61.9	3.00
Manatee †	90	50	67.5	3.05
Matanzas *	87	52	66.0	0.45
Merritt's Island †	86	55	68.3	1.15
Ocala *	86	50	64.3	1.53
Pine Level	.....	55	68.0	1.54
San Antonio	88	54	64.4	.....
St. Francis B'ks	81	45	65.5	1.00
Tallahassee	81	39	61.1	3.75
Villa City † *	86	52	67.5	0.59
Georgia.				
Athens (1)	76	32	54.7	2.89
Athens (2) †	78	30	55.6	1.82
Camilla *	83	38	61.2	3.57
Diamond *	.....	28	52.5	10.75
Forsyth *	80	37	59.6	4.39
Fort McPherson	76	29	55.3	3.68
Gillsville *	75	36	56.0	6.32
Hephzibah *	80	41	60.6	0.14
Jesup †	.....	.....	.....	1.23
Louisville	85	38	59.6	1.98
Marietta †	75	25	52.5	5.20
Milledgeville * †	79	36	56.7	1.74
Millen	85	37	58.8	.....
Monticello † *	.....	36	54.0	3.52
Point Peter *	.....	31	52.2	2.55
Perry	.....	38	57.9	2.19
Quitman (1) *	79	43	62.5	3.80
Thomasville (1)	81	37	61.9	2.94
Woolley's Ford *	72	26	50.6	.....
Idaho.				
Boisé Barracks	56	— 8	33.9	1.83
Era †	44	—20	22.6	4.87
Fort Sherman	55	—27	26.0	5.80
Kootenai	50	—26	21.4	2.94
Lewiston	58	— 9	32.7	1.14
Mullan	45	—27	24.0	2.00
Soda Springs †	45	—29	21.2	3.50
Illinois.				
Atwood	70	10	33.4	3.71
Aurora (1) †	64	3	30.6	1.18
Aurora (2) *	63	3	31.4	1.68
Beardstown †	.....	.....	.....	0.90
Beason	68	8	34.5	1.36
Belvidere	60	2	30.4	1.89
Centralia	76	10	40.0	5.26
Charleston	70	11	36.4	3.41
Cockrell	60	4	29.6	.....
Collinsville	76	6	39.6	3.88
Dwight	66	5	34.6	1.45
East Peoria	72	10	37.1	1.57
Flora	75	14	40.5	4.74
Fort Sheridan	56	— 2	32.6	1.84
Gibson City *	63	2	33.3	1.00
Golconda *	76	18	44.0	7.47
Grand Tower †	.....	.....	.....	7.61
Greenville	74	8	37.7	4.50
Griggsville *	65	4	33.4	1.43
Hennepin	66	6	32.2	2.03
Irishtown	.....	.....	.....	3.86
Jordans Grove *	78	8	38.7	3.93
Lacon	67	7	33.3	1.86
Lake Forest	60	3	30.5	1.77
Lanark *	57	2	29.9	1.61
Louisville	73	14	39.9	4.15
Martinsville	70	16	39.8	5.98
Mascoutah *	73	8	.....	4.70
McLeansborough	75	14	42.1	5.23
Mount Carmel †	.....	.....	.....	7.41
Olney	72	14	41.7	4.48
Oswego *	64	2	30.2	1.30
Ottawa †	65	9	34.1	1.40
Palestine	72	16	38.1	4.96
Pana	72	15	40.1	2.01
Peoria (1) * †	.....	.....	.....	1.33
Peoria (2)	68	7	35.7	1.36
Philo	70	8	35.5	3.47
Pontiac	66	8	34.5	1.20
Quincy	75	0	40.3	1.21
Riley	59	0	28.5	1.52
Rockford	59	1	29.4	2.69
Rock Island Ars'l	63	3	34.0	1.91
Rushville	70	2	32.9	1.43
Sandwich *	65	5	33.3	1.62
Sycamore *	61	2	29.5	1.15
Warsaw †	.....	.....	.....	1.00
Watseka	66	7	33.9	1.77
White Hall *	74	4	37.2	2.55
Winnebago	63	4	30.0	2.73
Indiana.				
Angola	62	13	33.5	3.24
Butlerville *	68	17	42.2	5.39
Cannelton	72	17	40.9	7.56
Columbia City	63	7	34.0	2.48
Columbus	70	19	40.4	6.09
Connersville	69	16	37.4	5.93
De Gonia Springs	70	19	43.9	7.06
Delphi	65	8	34.8	2.63

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Indiana—Cont'd.	°	°	°	*Ins.*
Evansville †	.....	.....	.....	7.33
Farmland	66	14	40.0	3.91
Franklin	69	16	39.4	6.25
Huntingburgh	78	19	43.2	12.12
Huntington †	.....	.....	.....	2.90
Jeffersonville	71	21	44.2	7.07
Laconia	76	20	43.7	7.10
La Fayette	69	6	38.0	2.52
Logansport (1)	.....	.....	.....	2.53
Logansport (2)	64	10	33.7	2.66
Marengo	73	23	45.3	7.70
Marion	67	9	34.5	1.40
Mauzy	66	12	36.0	5.52
Mount Vernon (1) †	.....	.....	.....	6.81
Mount Vernon (2)	71	18	42.4	6.81
Muncie	68	18	39.7	.....
New Providence	70	16	41.3	6.19
Point Isabel *	.....	8	34.0	4.02
Princeton	72	14	42.5	7.15
Richmond	63	14	37.8	5.81
Rushville †	.....	.....	.....	6.07
Seymour	70	18	41.9	6.15
Shelbyville	68	18	40.9	4.14
Spiceland	69	14	39.5	5.30
Sunman †	72	14	40.4	5.66
Vevay	71	20	44.2	6.06
Vincennes †	.....	.....	.....	7.19
Worthington	68	15	38.4	5.60
Indian Territory.				
Caddo Creek	81	4	45.9	.....
Eufaula	.....	.....	.....	2.55
Fort Gibson	77	7	46.2	2.84
Fort Reno	83	0	45.2	0.31
Fort Sill	81	5	47.3	0.46
Fort Supply	76	— 1	39.2	0.18
Guthrie	80	6	45.0	0.31
Healdton	74	10	49.3	0.84
Tulsa †	.....	.....	.....	1.25
Iowa.				
Amana †	58	— 2	28.0	0.97
Ames	56	— 8	24.8	0.95
Bancroft	52	—19	19.3	0.35
Belle Plaine *	58	— 6	26.0	1.00
Blakeville *	57	— 6	27.7	1.05
Carroll †	57	—14	22.9	0.65
Carson	59	0	25.5	0.25
Cedar Rapids †	60	0	28.7	1.04
Clarinda *	62	— 8	25.9	0.40
Clinton	63	3	29.6	1.73
Cresco	51	—12	21.0	0.81
Des Moines	60	— 5	27.4	0.70
Eagle Grove *	53	—14	21.0	0.85
Elkader *	52	— 6	25.4	0.50
Fayette †	57	— 5	24.7	0.88
Fort Madison *	65	2	32.4	1.83
Glenwood (1)	66	—15	25.9	0.25
Grinnell	56	— 6	26.1	0.65
Hampton	54	—11	20.4	0.71
Humboldt *	54	—11	21.8	0.27
Independence * d	53	— 4	21.4	1.08
Iowa City	59	4	32.1	0.75
Larrabee *	52	—24	18.8	0.63
Le Claire †	.....	.....	.....	1.16
Logan †	64	—13	26.5	1.10
Manson *	62	18	21.5	1.16
Maquoketa *	62	2	30.1	1.33
McCausland *	65	8	32.0	2.18
Monticello *	58	— 1	27.3	0.98
Mount Pleasant * †	68	5	29.1	1.20
Muscatine (2)	63	3	31.5	1.70
Osage	.....	.....	.....	0.37
Oskaloosa (1) *	63	1	29.0	0.85
Storm Lake *	54	—19	19.4	0.44
Vinton *	54	— 3	26.2	0.50
Washington *	63	2	31.4	1.27
Webster City *	54	—10	21.6	0.85
Wesley †	51	—13	19.8	0.45
West Bend * †	51	—12	19.4	1.35
Kansas.				
Abilene	66	— 2	31.6	0.32
Allison *	70	—11	23.4	0.40
Arlington	.....	.....	.....	0.50
Augusta	72	— 2	34.3	.....
Belleville	58	—10	35.1	.....
Bendena	.....	2	28.7	0.16
Bucklin	.....	.....	.....	0.40
Buffalo Park	68	—10	32.3	.....
Bunker Hill	72	— 6	33.9	0.40
Burr Oak	69	—10	.....	0.15
Cairo *	68	4	32.4	0.40
Carneiro	74	— 2	34.8	0.30
Cawker City	58	— 6	31.7	0.20
Collyer	62	— 8	31.3	0.60
Conway	70	— 6	32.0	0.85
Cunningham *	75	— 8	32.4	0.14
Dorrance	78	— 2	31.4	0.35
Elk Falls †	.....	.....	.....	T.
Ellis (1)	74	— 8	32.4	0.60
Ellis (2)	75	— 6	33.2	0.60
Ellsworth	68	— 2	33.2	0.50
Emporia	71	1	34.2	.....
Englewood *	72	0	36.6	0.27
Ft. Leavenworth (1)	70	— 4	33.0	1.24
Ft. Leavenworth (2)	66	— 2	30.3	0.55
Fort Riley	65	— 5	30.5	0.21
Kansas—Cont'd.	°	°	°	*Ins.*
Fremont	82	—11	29.6	0.45
Globe *	69	— 4	29.4	0.69
Gove City	92	8	30.3	0.64
Grainfield	70	— 9	30.0	0.45
Greenridge	72	— 7	33.6	0.38
Grenola	76	— 1	37.0	0.20
Grinnell	78	— 9	33.0	0.32
Halstead	68	— 3	32.2	0.30
Havensville	70	—10	28.1	0.20
Hays City	72	— 4	32.3	0.40
Horton	66	—10	30.4	0.87
Independence	75	0	37.1	0.95
Junction City	.....	.....	.....	0.47
Kansas City	72	— 2	33.2	0.58
Kellogg	79	— 4	37.4	0.40
Kingman	.....	.....	.....	0.38
Kirwin †	.....	.....	.....	0.16
La Harpe *	.....	8	34.2	1.03
Lakin	78	— 6	37.1	0.30
Lawrence	65	— 2	32.6	0.75
Lebo	76	— 1	35.0	0.52
Leoti	80	—10	30.5	?
Lincoln	70	— 3	31.2	0.25
Lisbon	80	— 3	35.6	.....
Luray	72	— 6	31.9	0.31
Macksville	72	— 7	31.5	0.38
Manhattan (1) †	.....	.....	.....	0.33
Manhattan (2)	70	— 5	30.0	0.24
Manhattan (3) *	63	— 2	30.6	0.29
Mankato	70	—10	26.4	0.08
Marmaton	76	— 1	36.4	1.00
McAllaster	68	—13	31.3	0.30
Minneapolis	62	— 4	30.0	0.20
Monument	76	—12	31.5	0.20
Morse *	60	— 2	30.2	0.59
Oakley	76	— 8	34.6	0.40
Oberlin †	.....	.....	.....	0.16
Offerle	73	— 5	31.0	0.57
Ogallah	65	— 6	29.2	0.57
Oswego	74	0	39.2	1.00
Ottawa	75	— 1	34.8	0.71
Quenemo	75	3	34.0	0.20
Quinter	79	—12	28.9	0.30
Richfield	89	— 2	38.9	0.12
Rome	73	— 1	36.9	0.28
Russell	60	— 8	29.6	.....
Salina †	58	— 6	32.3	0.45
Scott City	85	—14	35.8	0.20
Sedan *	76	0	37.4	0.54
Seneca	68	—10	28.2	0.22
Shields	76	—12	31.4	0.50
Tribune †	78	— 9	30.0	0.20
Victoria	62	— 8	35.0	0.35
Wakefield	.....	.....	.....	0.08
Wa Keeney	76	— 4	32.1	0.45
Walker	74	—10	29.5	.....
Wallace †	.....	.....	.....	0.17
Wellington	78	0	35.8	0.45
Weskan	79	— 5	37.6	0.30
Wilson	64	— 4	35.8	0.35
Winona	76	—11	33.4	0.35
Yates Center *	77	— 1	34.9	0.76
Kentucky.				
Ashland * †	.....	16	41.5	6.43
Bowling Green †	76	20	49.8	12.50
Burnside †	.....	.....	.....	13.33
Caddo	68	16	32.4	3.38
Catlettsburgh †	.....	.....	.....	5.95
Canton *	72	22	46.0	8.36
Earlington	76	16	44.8	7.27
Eddyville †	.....	.....	.....	7.09
Falmouth (1) †	.....	.....	.....	7.32
Frankfort (1) †	.....	.....	.....	8.18
Frankfort (2)	74	19	44.5	8.18
Franklin † *	74	21	48.0	9.42
Greensburgh †	.....	.....	.....	12.35
Louisa †	.....	.....	.....	9.02
Millersburgh * †	70	25	47.7	7.27
Mount Sterling †	70	23	44.0	8.37
Murray	74	19	45.1	12.46
Newport Barracks	70	18	43.4	4.62
Owenton † d	69	18	42.2	7.30
Paducah †	.....	.....	.....	8.35
Pellville †	87	19	47.8	7.16
Princeton	86	18	46.2	10.77
Richmond †	71	18	46.4	a5.08
Shelbyville †	74	19	44.2	7.63
South Fork † *	72	25	48.3	2.47
Williamsburgh †	.....	.....	.....	7.82
Louisiana.				
Abbeville *	81	35	64.5	3.78
Alexandria †	.....	.....	.....	4.35
Amite City †	82	28	62.3	4.69
Baton Rouge	80	34	61.4	3.66
Cameron †	101	31	63.8	2.90
Chataignier *	82	32	64.1	6.11
Cheneyville	.....	.....	.....	2.27
Clinton	81	32	60.2	6.82
Columbia	.....	.....	.....	6.00
Convent	88	35	65.4	2.78
Coushatta (1)	.....	.....	.....	5.99
Coushatta (2) †	82	24	55.6	5.51
Crowley	81	34	62.2	3.86
Delhi †	.....	.....	.....	5.78
Donaldsonville	82	30	61.1	3.16

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Louisiana—Cont'd.	°	°	°	*Ins.*
Edgard	82	41	65.8	2.84
Emilie	80	36	62.6	2.53
Farmerville	88	20	56.7	5.20
Girard†	81	42	66.0	5.07
Grand Cane	81	21	58.7	5.40
Grand Coteau	80	30	64.5	3.85
Hammond	84	30	65.2	3.43
Houma†	82	36	62.7	3.79
Jackson Barracks	.....	32	.....	3.30
Jeanerette	84	37	60.5	2.95
Jonesville	81	50	66.0	2.80
La Fayette†	82	35	63.9	3.46
Lake Charles	85	20	60.2	2.55
Liberty Hill	82	26	58.0	4.44
Luling	83	30	62.1	3.49
Mandeville	81	33	65.7	1.82
Marksville*†	83	22	62.6	4.50
Maurepas	83	30	61.0	3.14
Melville†	81	32	61.6	6.44
Minden†	80	24	56.4	2.23
Monroe†	76	28	57.5	4.25
New Iberia	85	36	65.6	3.73
Plaquemine	83	28	60.8	3.42
Port Eads	79	40	66.3	3.55
Shell Beach	81	26	61.6	2.50
Sugar Ex. Station	81	36	62.4	3.10
Thibodeaux	.....	.....	.....	2.05
Vidalia	83	32	61.4	8.69
Maine.				
Bar Harbor	53	— 2	24.7	3.64
Belfast*	48	0	24.9	.....
Calais	49	— 7	22.4	4.41
Cornish	48	— 4	23.6	4.43
Fairfield	47	—16	20.5	3.31
Farmington	.....	— 8	18.4	5.42
Fort Preble	.....	.....	.....	3.60
Gardiner	56	— 2	24.9	3.78
Kennebec Arsenal	48	— 5	19.8	6.01
Kent's Hill	48	— 8	19.1	3.56
Lewiston	51	— 4	22.3	4.14
Orono†	46	— 9	22.7	4.52
Petit Menan*	45	4	25.2	.....
West Jonesport	48	1	23.6	.....
Maryland.				
Barren Creek Sp'gs†	71	25	45.4	2.95
Cumberland (1)	70	17	40.0	4.24
Cumberland (2)	76	19	42.4	3.66
Fallston	74	20	40.5	6.07
Fort McHenry	71	21	42.5	3.88
Frederick	74	24	42.4	4.02
Gaithersburgh*	68	22	38.0	.....
Galena†*	.....	25	41.8	3.69
Gambrills*	.....	25	43.6	2.47
Jewell	.....	27	43.6	5.55
Leonardtown	73	26	44.2	4.40
McDonogh	66	20	41.3	5.38
Mt. St. Mary's Coll†	70	12	40.2	3.97
Massachusetts.				
Amherst	59	2	32.4	3.08
Amherst Ex Sta (1)	60	3	30.8	4.01
Andover	55	0	30.3	.....
Blue Hill (sum'b)	61	0	30.5	2.96
Blue Hill (base)	64	0	32.2	3.15
Blue Hill (valley)	65	— 3	32.5	2.40
Boston	.....	.....	.....	3.05
Brewster	64	11	36.2	2.57
Cambridge (1)	60	0	31.2	2.85
Cambridge (2)	62	3	31.7	5.22
Chestnut Hill	63	— 2	32.0	3.12
Chicopee	.....	.....	.....	4.24
Clinton	.....	.....	.....	1.95
Cotuit	58	7	34.2	2.65
Deerfield*	56	— 1	30.6	.....
Dudley	62	5	30.8	3.00
Fall River (1)	60	10	33.3	3.18
Fiskdale	.....	.....	.....	3.75
Fitchburg (1)*	55	— 2	28.7	3.68
Fitchburg (2)	59	0	30.3	4.07
Fort Warren	47	3	29.2	2.84
Framingham	62	— 1	32.6	3.60
Gilbertville	57	— 4	30.8	2.96
Groton (1)	60	— 7	30.0	3.84
Groton (2)	59	1	30.3	.....
Heath	50	— 6	26.8	.....
Holyoke	60	4	33.1	4.66
Kendall Green	54	— 4	32.4	2.96
Lake Cochituate	65	— 5	32.6	3.26
Lawrence	57	— 3	30.2	3.50
Leicester	57	0	28.4	3.82
Leominster	.....	.....	.....	3.91
Long Plain*	64	4	33.4	3.16
Lowell (1)	58	2	30.5	3.75
Lowell (2)	60	— 2	30.7	.....
Lowell (3)	60	2	30.6	.....
Ludlow (1)	67	4	33.7	4.19
Ludlow (2)	60	— 4	30.4	4.52
Lynn	60	5	32.1	4.69
Mansfield	59	— 2	32.8	3.80
Medford	.....	.....	.....	3.35
Middleborough	65	1	33.8	2.90
Milton*	62	0	33.5	3.57
Monson	61	— 1	30.8	3.43
Mount Nonotuck	.....	.....	.....	4.00
Mystic Lake	.....	.....	.....	3.36
Mystic Station	.....	.....	.....	3.25

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Massachusetts—Con.	°	°	°	*Ins.*
Nahant	57	6	31.8	.....
New Bedford (1)	60	9	33.5	2.33
New Bedford (2)	63	9	35.0	2.85
Newburyport (1)	60	— 2	31.3	4.27
Newburyport (2)	.....	.....	.....	4.76
Northampton	51	4	31.4	4.58
North Billerica	62	0	31.9	3.80
Plymouth	61	8	32.6	3.60
Princeton	56	— 6	27.3	2.60
Provincetown	55	9	35.0	2.92
Randolph	.....	.....	.....	3.35
Roberts' Dam	.....	.....	.....	2.86
Royalston*	52	2	33.1	.....
Salem (1)	54	3	33.6	.....
Salem (2)	.....	.....	.....	3.21
Somerset*	66	4	35.3	2.93
South Hingham	.....	— 4	.....	3.45
Springfield Armr'y	60	5	32.8	4.07
Taunton (1)	65	6	34.3	3.62
Taunton (2)	66	6	35.0	3.50
Taunton (3)	66	3	34.2	3.70
Wakefield	57	— 3	29.8	3.61
Waltham	.....	.....	.....	3.28
Wellesley	63	6	34.1	2.84
Westborough*	60	2	33.6	3.62
Williamstown	55	0	29.4	3.92
Winchester	.....	.....	.....	3.39
Worcester (1)*	62	4	32.8	.....
Mexico.				
La Logia	86	43	62.8	T.
Leon de Aldemas	81	39	59.7	T.
Zacatecas	80	23	52.8	0.01
Michigan.				
Adrian	64	11	32.2	3.02
Albion (1)	61	14	32.8	2.26
Albion (2)	.....	.....	.....	1.87
Allegan	.....	.....	.....	2.24
Alma	59	4	27.4	2.07
Ann Arbor	61	10	31.7	1.38
Arbela	.....	.....	.....	1.98
Atlantic*	34	1	13.3	3.36
Ball Mountain	59	10	29.0	1.57
Bangor	63	16	34.1	2.35
Bear Lake	50	7	25.3	3.26
Bell Branch*	62	12	30.5	2.03
Benton Harbor	66	17	37.5	2.07
Benzonia	49	8	26.0	2.57
Berlin	61	11	33.8	1.82
Berrien Springs*	64	14	33.4	2.16
Big Rapids	54	9	28.0	1.68
Birmingham	61	11	32.5	1.80
Bronson	60	12	29.8	2.09
Buchanan	62	11	33.1	2.98
Calumet	47	— 4	17.5	2.11
Cassopolis	62	13	34.3	2.12
Caldwell	50	6	24.7	2.60
Charlevoix	44	5	22.8	1.70
Chase	52	2	26.8	1.00
Chelsea	62	5	32.8	1.85
Clinton	62	10	32.2	2.13
Colon	62	14	30.6	2.26
Columbiaville	58	10	31.3	.....
Concord	62	13	32.6	1.73
Crystal Falls	50	— 5	17.2	1.73
East Tawas	55	1	28.4	1.31
Eden	62	9	31.3	2.03
Evart	53	2	26.7	3.82
Fitchburgh	.....	.....	.....	2.26
Flint	61	7	30.2	0.77
Fort Brady	46	—16	17.8	2.65
Fort Mackinac	41	1	21.5	1.72
Fort Wayne	62	11	33.1	2.07
Fremont*	54	8	29.1	1.77
Gaylord	47	1	30.8	.....
Gladwin	53	5	28.4	1.69
Grand Rapids	59	11	30.2	1.05
Grape	64	11	34.2	1.94
Grayling	46	2	26.2	2.62
Gulliver Lake	39	— 4	19.9	2.95
Hanover	61	7	34.2	1.78
Harrison	51	0	24.0	1.80
Harrisville	50	— 8	25.3	1.73
Hart	52	10	32.5	0.97
Hartford	60	16	33.5	2.10
Hastings	61	11	31.4	2.00
Hayes	62	9	30.5	1.00
Highland Station*	59	10	30.3	1.49
Hillman	.....	.....	21.8	2.20
Hillsdale	64	14	33.2	1.75
Hudson	63	5	30.9	2.12
Ionia	60	5	34.2	2.57
Ivan	49	3	24.9	2.00
Jeddo	56	10	28.9	1.77
Kalamazoo	62	11	34.0	1.53
Lansing	61	10	31.9	1.85
Lathrop	44	— 4	19.4	2.30
Madison	62	14	33.0	2.30
Manchester	.....	.....	.....	1.83
Marshall	62	12	32.1	1.83
May	58	7	29.7	2.10
Mio	52	— 3	23.7	2.79
Montague	50	8	28.9	1.64
Mottville	64	4	33.8	1.99
Noble	.....	.....	.....	1.92
North Aurelius	.....	.....	.....	1.96

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Michigan—Cont'd.	°	°	°	*Ins.*
North Marshall	55	7	28.9	1.69
Olivet	62	8	31.0	1.78
Otsego	62	11	31.8	2.08
Ovid	58	10	30.4	1.63
Parkville	.....	.....	.....	2.14
Paw Paw	63	11	33.8	1.91
Pontiac	60	14	32.0	1.97
Pulaski*	56	15	31.1	1.98
Rawsonville*	62	16	33.6	2.20
Romeo*	60	8	32.6	1.26
Roscommon	50	4	24.8	2.77
Saint Ignace	40	— 5	19.6	2.64
Saint John's	60	13	28.4	1.94
Sand Beach	57	8	27.3	2.34
South Albion	61	16	34.9	1.94
Stanton	55	4	28.4	1.96
Stockbridge	.....	.....	.....	1.85
Thoruville	61	7	31.4	1.66
Traverse City (2)	50	6	26.5	3.15
Vandalia	60	12	32.2	1.78
Vienna	.....	.....	.....	2.04
Washington	60	9	30.8	1.58
Weldon Creek	58	9	29.0	2.78
West Branch	47	2	26.9	1.45
Williamston	60	21	33.6	1.80
Ypsilanti (1)	57	10	30.8	2.61
Ypsilanti (2)	62	15	33.2	1.82
Minnesota.				
Alexandria†	.....	.....	.....	0.23
Crookston	43	—32	2.6	0.70
Farmington	46	—12	19.2	1.00
Fergus Falls†	.....	.....	.....	0.10
Fort Ripley†	.....	.....	.....	0.28
Fort Snelling	49	—12	19.9	0.22
L. Winnibegoshish	44	—25	8.5	1.01
Leach Lake	45	—27	9.2	0.95
Le Sueur*	48d	—11d	17.2d	0.60
Mankato	52	— 8	20.9	0.55
Minneapolis*	47	—12	17.5	1.28
Montivideo	47	—20	14.2	0.21
Morris	44	—21	10.9	0.02
Northfield	49	—10	19.4	0.58
Ortonville†	.....	.....	.....	T.
Owatonna	47	—11	18.7	0.61
Pine River	44	—25	6.6	0.42
Pokegama Falls	42	—36	9.4	0.95
Red Wing	51	— 7	22.2	0.53
Redwood Falls†	.....	.....	.....	0.06
Rolling Green	49	—18	16.2	0.50
Saint Charles *†	50	— 9	19.5	0.80
Sheldon*	.....	— 4	21.0	0.90
Tracy†	.....	.....	.....	0.10
Mississippi.				
Agricultural Col'ge	76	23	56.2	8.03
Batesville†	80	26	50.2	5.95
Booneville*	79	22	57.8	11.23
Brookhaven†	81	27	61.2	8.89
Canton	.....	32	.....	7.23
Columbus†	84	28	57.5	9.53
Edwards†	80	29	58.1	5.62
Fayette	81	32	60.8	7.59
Holly Springs (1)*	76	26	53.0	9.85
Jackson†	80	28	55.7	10.50
Kosciusko†	80	28	57.4	9.50
Lake†	81	25	58.4	7.56
Logtown	82	33	64.0	2.91
Louisville†	84	23	58.3	9.62
Moss Point	80	36	63.4	2.15
Natchez	80	38	62.7	7.27
Okalona†	.....	.....	.....	7.60
Palo Alto	81	28	56.8	9.18
Pearlington†	82	33	63.4	2.91
Port Gibson†	82	26	59.3	3.80
Pontotoc	79	25	53.3	8.28
Rienzi	76	28	54.9	12.11
Summit	79	27	60.0	5.38
Vaiden	87	26	58.4	10.41
Washington	82	30	61.2	7.70
Water Valley*	78	26	56.1	6.79
Waynesboro' (1)†	84	31	58.1	4.87
Yazoo City†	.....	.....	.....	7.95
Missouri.				
Appleton City	72	— 1	37.5	2.05
Brunswick	70	— 4	33.4	1.20
Carthage†	75	— 1	40.0	2.23
Conception	68	— 8	29.0	1.04
Craig	60	— 5	28.3	0.35
Excelsior Springs*	71	— 3	31.0	0.71
Fayette†	71	0	36.1	1.68
Fox Creek	.....	.....	36.4	2.30
Frankford (1)*	.....	— 2	31.7	1.89
Glasgow	71	— 1	34.6	1.68
Grand Pass	70	0	34.2	0.89
Hannibal	70	— 2	.....	.....
Harris	58	— 4	30.9	0.78
Harrisonville†	72	— 1	31.0	0.46
Hermann†	.....	.....	.....	2.00
Ironton*	80	6	42.0	5.00
Jefferson Barracks	79	4	42.1	3.85
Jerome	.....	.....	.....	3.14
Kansas City	72	— 1	34.2	0.83
Kidder	.....	— 6	.....	0.70
Kirksville	.....	.....	29.8	0.50
Langdon	.....	.....	.....	0.30
Lebanon	78	2	42.0	.....

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Missouri—Cont'd.	°	°	°	*Ins.*
Liberty	70	— 2	32.8	.....
Louisiana Bridge†	.....	.....	.....	1.14
Mexico	.....	.....	.....	1.97
Miami	70	— 2	34.4	1.24
New Frankfort*	68	0	34.6	2.20
New Haven*	70	2	38.0	7.00
Oak Ridge*	75	16	42.0	6.50
Oregon	67	7	29.3	1.40
Ozark*	70	6	40.3	2.70
Princeton*	60	— 4	31.7	0.75
Saint Charles (1)	.....	8	.....	2.70
Saint Charles (2)	76	2	42.5	1.32
Saint Joseph†	.....	.....	.....	0.45
Sedalia	70	— 4	37.4	1.70
Shelbina	.....	.....	.....	0.50
Steelville	78	3	39.7	2.45
Troy	.....	.....	33.1	2.85
Warrensburgh*	60	— 2	32.8	1.27
Warrenton*	.....	5	33.6	.....
Willow Springs†	81	2	43.6	4.58
Wither's Mill*	70	0	.....	1.00
Montana.				
Camp Poplar River	45	—46	—0.1	0.10
Custer	.....	.....	.....	0.07
Fort Assinniboine	42	—40	1.3	0.69
Fort Custer	64	—34	17.6	0.24
Fort Keogh	52	—47	10.3	0.40
Fort Logan†	52	—40	9.4	0.60
Fort Maginnis	59	—43	15.7	0.58
Fort Missoula	42	—18	18.2	1.70
Fort Shaw	56	—39	14.2	0.43
Galpin†	.....	.....	.....	0.31
Glendive†	50	—44	8.4	0.03
Kintyre	.....	.....	.....	0.17
Martinsdale	48	—42	15.0	0.90
Powder River†	50	—41	12.3	0.49
Sheldon	48	—38	19.4	?
Virginia City	50	—24	18.0	0.91
Nebraska.				
Ansley†	70	—26	25.4	0.20
Creighton†	58	—23	21.4	0.05
Culbertson†	.....	.....	.....	0.16
De Soto*	64	—11	24.8	0.38
Fairbury	63	— 6	33.0	0.20
Falls City†	65	—10	31.4	0.20
Fort Niobrara	65	—29	19.8	0.57
Fort Omaha	65	— 8	27.4	0.70
Fort Robinson	72	—23	27.5	0.66
Fort Sidney	70	—12	28.6	0.41
Fremont*	60	—15	24.3	0.61
Genoa†	60	—24	22.7	0.44
Gering	70	—18	27.1	0.43
Grant	.....	—10	.....	.....
Hay Springs	62	—21	23.0	0.40
Howe	60	—12	28.4	3.00
Kennedy†*	70	—16	26.2	0.31
Kimball	69	—18	31.0	T.
Lexington*	70	—15	27.2	0.10
Marquette (1)	67	—15	.....	0.42
North Loup*†	58	—28	23.2	0.05
Plattsmouth†	.....	.....	.....	0.25
Syracuse*	64	— 8	26.4	0.31
Weeping Water*	65	—15	23.7	0.49
Nevada.				
Battle Mountain*	60	—12	33.9	0.50
Beowawe*	60	—20	28.0	1.00
Brown's*	63	— 4	39.6	1.40
Carlin*	55	—34	23.2	1.45
Elko (1)*	45	—26	24.7	1.10
Fenelon*	55	—20	28.8	3.45
Golconda*	60	—14	32.8	0.42
Hot Springs (1)*	70	— 2	29.8	0.55
Humboldt*	60	—15	29.3	1.32
Palisade*	52	—20	29.3	1.70
Reno*	58	6	31.8	1.75
Tecoma*	48	—15	26.5	1.30
Toano*	60	—18	28.0	1.86
Wadsworth*	62	6	33.4	0.70
Wells*	52	—20	29.6	1.41
Winnemucca*	52	—18	30.5	0.55
Newfoundland.				
Saint John's	47	— 3	21.1	4.06
New Hampshire.				
Antrim	.....	—10	.....	3.21
Berlin Falls	48	—17	19.2	.....
Berlin Mills*	51	—12	21.9	4.84
Concord	55	— 7	28.0	4.20
East Canterbury	50	— 7	22.6	3.96
Hanover (1)	51	— 6	25.4	2.75
Hanover (2)	56	— 8	25.0	2.96
Lake Village	.....	.....	.....	4.28
Manchester (1)	55	— 6	29.6	4.80
Manchester (2)	57	— 6	28.2	3.96
Mine Falls	.....	.....	.....	4.10
Nashua*	59	— 4	29.7	4.21
Newton	58	— 5	28.6	3.51
North Conway	57	—10	22.8	3.96
North Sutton*	55	— 6	23.9	3.49
Pennichuck Station	.....	.....	.....	4.30
Plymouth	51	—10	21.6	4.82
Stratford	52	—15	22.8	2.89
Walpole	52	— 8	25.8	4.12
West Milan	54	—20	22.5	1.97
Wier's Bridge	.....	.....	.....	4.12

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
New Jersey.	°	°	°	*Ins.*
Allaire	69	17	39.6	.....
Asbury Park	71	19	41.6	3.74
Belleville	.....	.....	.....	5.10
Beverly†	76	20	39.8	3.83
Billingsport L. H*.	66	22	40.7	.....
Bridgeton*	72	24	44.0	3.60
Cape May C. H.	68	22	44.1	3.11
Egg Harbor City	72	19	40.9	3.77
Freehold	68	17	39.2	4.25
Gillette	67	14	36.3	3.18
Hanover	66	16	38.4	.....
Highland Park	68	17	38.5	4.20
Hopewell	.....	.....	.....	4.71
Imlaystown*	68	19	39.8	4.70
Junction	.....	14	.....	4.64
Lambertville*	68	22	40.0	3.78
Locktown	67	16	38.1	3.74
Madison	69	15	36.8	4.75
Moorestown*	70	19	39.4	3.62
Newark (1)	66	18	37.7	4.27
Newark (2)	.....	.....	.....	5.12
New Brunswick (1)	68	20	40.8	4.52
New Brunswick (2)	67	17	38.2	4.15
New Brunswick (3)	68	17	38.4	.....
Newton	68	12	34.4	4.13
Ocean City*	68	24	43.0	5.10
Oceanic	67	20	40.9	4.52
Princeton	67	18	38.2	3.86
Rancocas	68	19	.....	5.00
Readington*	72	20	41.9	.....
South Orange	70	16	37.0	5.32
Tenafly	59	15	36.0	4.46
Trenton*	72	18	44.0	4.58
Union*	68	17	37.1	4.51
Woodbury	69	22	42.6	3.85
New Mexico.				
Albuquerque	72	11	42.8	.....
Chama	65	−17	30.4	2.90
Coolidge	67	−10	36.7	0.40
Deming*	84	26	50.4	0.00
Fort Bayard	81	10	44.2	T.
Fort Marcy	68	3	34.6	0.83
Fort Selden	85	15	49.2	0.00
Fort Stanton	78	11	42.8	0.30
Fort Union	68	4	28.1	0.11
Fort Wingate	70	− 8	37.2	1.79
Gallinas Springs†	80	9	44.8	0.03
Hillsborough†	80	9	46.6	0.04
Las Vegas†	76	6	36.8	1.50
Lordsburg*	74	13	45.5	0.05
Los Lunas†	76	23	43.3	0.87
Nogal	.....	.....	.....	1.80
Red Canon	74	10	42.1	T.
Roswell	61	9	37.3	0.15
Springer†	.....	.....	.....	0.00
New York.				
Alfred Centre	60	6	30.9	2.31
Ampersand	50	−16	23.4	4.63
Angelica†	58	5	31.4	2.33
Ardenia*	66	13	36.5	4.38
Boyd's Corners*†	64	10	35.8	4.94
Brockport	.....	.....	.....	3.66
Brookfield	53	− 9	28.5	3.56
Canton†	51	−13	21.7	4.19
Constableville	50	− 6	23.6	5.93
Cooperstown	56	− 4	29.2	2.91
David's Island	69	14	35.6	2.49
Eden	63	9	32.1	2.70
Elmira†	58	10	34.6	1.68
Factoryville†	66	7	32.1	2.18
Fleming*	60	6	29.9	2.74
Fort Columbus	65	18	39.2	3.57
Fort Hamilton	68	11	38.5	3.12
Fort Niagara	58	15	32.2	2.56
Fort Porter	53	14	32.2	3.46
Fort Schuyler	60	6	36.2	3.84
Fort Wadsworth	69	17	39.4	4.28
Geneva	54	8	32.0	2.45
Honeymead Brook*	60	4	32.5	2.74
Humphrey†	64	10	33.2	3.91
Ilion†	59	0	29.5	4.89
Ithaca	61	7	32.1	2.17
Keene Valley	60	− 7	23.3	3.73
Kendall	63	11	31.8	3.53
Kingston	62	5	32.0	3.70
Le Roy	56	7	37.8	3.45
Lyons	62	11	31.0	2.76
Madison Barracks	49	−19	22.0	3.09
Malone	51	0	22.3	5.31
Marshland	60	7	34.3	2.77
Middleburgh†	61	0	31.4	2.15
Middletown	61	11	32.6	4.26
New Lisbon	.....	0	27.1	.....
North Hammond†*	48	− 5	22.9	4.38
Number Four†	50	−16	22.1	4.49
Ogdensburgh	45	−16	17.7	.....
Oxford	55	20	28.5	3.73
Palermo†	50	4	27.5	2.62
Palmyra*	57	10	33.8	.....
Peekskill	66	12	33.3	4.72
Pendleton Centre*	54	15	28.4	2.67
Perry City	54	1	30.0	2.35
Plattsburgh	52	− 4	22.4	2.11
Plattsburgh B'ks	56	− 5	23.6	2.40
Potsdam*	47	− 9	20.6	6.42

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
New York—Cont'd.	°	°	°	*Ins.*
Quaker Street	57	− 2	25.4	2.46
Queensbury*	.....	− 6	23.8	4.25
Rome	54	0	27.8	4.77
Setauket	64	16	37.6	3.00
Sherman	59	11	32.2	4.26
South Canisteo	61	6	31.4	2.67
South Kortright*†	.....	2	30.7	2.06
Turin*	49	− 6	21.9	4.83
Utica	58	0	29.2	4.79
Watervleit Arsenal	58	2	30.8	3.55
Wedgewood	57	1	29.5	2.52
West Point	64	10	32.7	5.12
White Plains*	64	12	37.9	3.84
Willets Point	68	18	38.7	3.92
North Carolina.				
Asheville (1)	.....	.....	.....	5.49
Asheville (2)	73	22	49.0	5.30
Bryson City	.....	.....	.....	8.37
Chapel Hill	78δ	29δ	47.8δ	3.03
Clear Creek*	80	29	54.6	3.95
Currituck Inlet†	.....	.....	.....	2.86
Douglas	77	20	48.8	5.50
Franklin*	73	17	49.4	6.60
Highlands	67	11	43.0	9.23
Hot Springs	78	26	50.9	.....
Lenoir*	72	26	49.0	5.70
Mount Airy	74	19	47.6	5.33
Mount Holly†	.....	.....	.....	3.58
Morganton	72	23	48.6	6.43
Murphy	.....	.....	.....	10.48
New Berne†	80	36	58.0	2.16
Oak Ridge	73	24	48.8	4.70
Pittsborough*	76	29	51.0	2.50
Raleigh	80	32	54.0	2.20
Salisbury	74	29	52.5	3.23
Soapstone Mount*	.....	28	48.5	4.25
Washington	81	33	56.8	2.31
Weldon†	78	23	51.6	3.03
Winslow*	81	26	53.9	2.00
Willeyton	80	25	53.3	1.58
North Dakota.				
Davenport	41	−25	6.0	0.30
Fort A. Lincoln	48	−34	3.4	0.10
Fort Buford	40	−43	−0.2	0.18
Fort Pembina	33	−46	−6.4	0.24
Fort Totten	40	−37	−1.6	0.60
Fort Yates	54	−28	9.6	0.43
Gallatin	40	−42	−3.3	0.26
Napoleon	42	−32	3.4	0.43
New England City	48	−43	5.3	0.18
Steele	40	−41	1.5	0.50
Wahpeton	52	−26	8.1	.....
Ohio.				
Akron	64	13	36.9	4.99
Ashland*	66	17	35.7	5.50
Athens	70	16	42.6	5.37
Bangorville	64	10	36.6	6.05
Bellevue*	64	8	35.4	4.43
Bement*	65	18	35.7	3.70
Caledonia†	.....	.....	.....	5.67
Canton†	65	14	37.2	6.17
Carrollton	.....	19	37.4	6.30
Celina	67	14	39.8	4.76
Circleville (1)†	.....	.....	.....	5.14
Circleville (2)	.....	.....	.....	5.26
Clarksville	68	18	40.3	4.31
Cleveland	65	15	37.2	4.19
College Hill	69	19	43.0	4.64
Columbus Barracks	67	16	41.3	5.79
Dayton	68	16	41.0	5.09
Demos	64	16	40.2	6.48
Elyria	68	16	37.2	4.22
Findlay	66	10	36.7	4.76
Fostoria	66	12	37.1	4.92
Garrettsville	64	10	34.4	4.99
Georgetown	68	17	42.3	7.08
Granville	65	15	39.2	6.36
Gratiot*	68	14	41.3	5.51
Greenville	65	14	38.2	4.71
Hanging Rock	73	19	44.0	7.22
Hassan	80	10	38.8	5.10
Hiram	62	14	34.4	4.68
Hudson	.....	.....	.....	5.10
Jacksonborough	66	16	39.7	5.00
Jefferson	63	14	34.3	4.26
Kent	68	10	39.2	4.47
Kenton*†	68	16	38.2	4.63
Leipsic	72	14	36.3	3.43
Logan	70	15	41.7	5.47
Lordstown	65	12	36.0	4.40
Mansfield†	.....	.....	.....	6.03
Marietta (1)	.....	.....	.....	5.32
Marietta (2)	68	17	43.3	4.96
McConnelsville	69	14	43.1	5.08
Napoleon†	65	16	37.2	3.31
New Alexandria	63	13	40.5	5.82
New Comerstown	64	14	39.1	6.00
North Lewisburgh	67	12	39.4	5.95
Oberlin	64	14	36.7	4.46
O. S. University	66	16	39.9	5.93
Orangeville*	.....	12ϳ	31.6ϳ	4.20
Ottawa	.....	.....	.....	3.70
Poland*	.....	12	35.0	4.60
Pomeroy	69	17	46.3	5.16
Portsmouth (1)†	.....	.....	.....	7.04

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Ohio—Cont'd.	°	°	°	*Ins.*
Portsmouth (2)	72	22	45.2	7.02
Salineville*	63	13	39.2	6.24
Shiloh	66	18	38.7	4.75
Sidney†	64	15	39.7	4.98
Springborough	.....	.....	.....	5.21
Tiffin	66	15	35.6	4.25
Upper Sandusky	65	13	38.6	4.96
Vienna*	62	10	34.4	4.15
Wapakoneta	65	13	37.9	5.11
Wauseon	64	5	33.3	3.43
Waverly	71	21	44.7	3.91
Waynesville	.....	.....	.....	5.26
Westerville	65	16	38.9	5.32
West Milton*	67	15	41.0	6.48
Weymouth	62	12	34.3	4.93
Wooster†	64	14	36.6	6.20
Yellow Springs	66	13	39.4	6.04
Youngstown	65	13	38.3	4.89
Zanesville†	.....	.....	.....	5.09
Oregon.				
Albany	54	11	38.7	11.18
Ashland (1)*	52	14	36.6	3.58
Bandon	59	23	42.2	13.85
East Portland	55	4	.....	6.50
Ellensburgh	54	27	43.7	23.68
Eola	57	7	37.0	9.48
Grant's Pass	60	15	39.2	10.12
Heppner	60	−17	30.0	1.38
Jordan Valley	49	−24	29.0	1.78
Joseph	50	−21	22.9	4.96
McMinnville	56	11	36.6	8.70
Mount Angel	55	8	38.2	7.65
Siskiyou*	58	9	32.4	14.40
Tillamook	54	17	36.6	14.10
Pennsylvania.				
Allegheny Arsenal	69	16	42.0	5.66
Altoona	66	15	41.7	4.09
Annville	75	19	39.5	.....
Aqueduct*	73	20	38.4	4.37
Bethlehem	68	17	40.0	4.67
Blooming Grove*	64	6	34.5	4.50
Blue Knob*	62	− 7	33.2	3.66
Brookville†	.....	.....	.....	2.30
Cannonsburgh	68	13	39.0	5.55
Carlisle	72	19	37.7	4.12
Catawissa	62	18	38.0	3.41
Centre Valley	71	20	40.2	3.34
Chambersburgh	72	15	37.9	3.90
Charlesville	67	6	36.6	2.81
Clarion (1)†	.....	.....	.....	4.90
Clarion (2)	62	8	34.8	4.78
Coatesville	73	18	38.2	4.88
Confluence†	.....	.....	.....	5.23
Coopersburgh	68	17	37.2	5.32
Corry	62	2	34.1	4.65
Coudersport	60	1	34.3	5.90
Drifton	63	10	33.4	3.60
Doylestown	.....	.....	.....	4.29
Dyberry	60	0	30.1	3.74
Eagle's Mere	55	8	30.4	6.20
Easton	.....	.....	.....	3.75
Edinborough	58	10	32.1	0.60
Emporium	65	7	36.1	5.02
F'ks of Neshaminy	.....	.....	38.2	4.28
Franklin*	60	8	34.5	4.84
Frankford Arsenal	71	18	41.9	3.10
Frederick	.....	.....	.....	4.35
Freeport†	.....	.....	.....	5.46
Germantown	65	20	39.4	2.97
Gettysburgh†	72	19	37.8	4.51
Girardville	64	15	35.8	4.56
Grampian Hills	60	13	33.8	5.52
Greensborough†	.....	.....	.....	5.25
Greensburgh	68	16	42.5	4.41
Greenville	64	12	35.8	5.05
Hollidaysburgh	68	4	37.3	4.70
Honesdale	59	3	33.2	3.19
Hulmeville	67	14	33.7	3.83
Huntingdon	68	8	37.7	5.18
Indiana	64	11	38.5	5.89
Johnstown	67	12	40.4	5.05
Kennett Square	59	18	37.6	4.74
Lancaster	70	15	38.8	3.14
Lansdale	.....	.....	.....	4.28
Le Roy	57	6	32.2	2.96
Lewisburgh	66	16	36.9	3.89
Lewistown	72	16	37.9	4.16
Lock Haven	68	12	35.6	4.04
Lock No. 4†	.....	.....	.....	5.04
Lynnport	68	12	36.2	5.00
Mahoning†	.....	.....	.....	3.08
Mauch Chunk	67	14	36.0	5.36
McConnellsburgh	71	16	39.2	4.00
Meshoppen	.....	8	32.8	.....
Myerstown	70	15	36.8	3.78
New Bloomfield	79	16	36.7	6.11
New Castle	65	12	40.9	6.39
Nisbet*	.....	15	35.8	3.70
Oil City†	.....	.....	.....	2.46
Ottaville	.....	.....	.....	4.61
Parker's Landing†	.....	.....	.....	5.33
Petersburgh	69	9	35.5	4.98
Philipsburgh†	63	4	35.5	5.14
Pleasant Mount	.....	8	29.3	4.20
Point Pleasant	.....	.....	.....	4.73

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Pennsylvania—Con.	°	°	°	*Ins.*
Pottstown	71	19	39.8	4.81
Quakertown	69	15	36.8	5.18
Reading†	70	17	36.4	4.15
Rimersburgh	63	5	34.2	.....
Salem Corners	59	6	31.9	3.80
Saltsburgh†	.....	.....	.....	6.97
Seisholtzville	.....	.....	.....	4.39
Smith's Corners	.....	.....	.....	4.38
Somerset	65	10	36.8	4.51
South Eaton	63	9	34.8	3.09
State College	69	10	35.3	4.31
Swarthmore	68	21	40.2	3.93
Troy*	61	10	.....	1.91
Tuscarora	72	21	38.8	4.49
Uniontown	66	19	42.1	4.73
Warren†	.....	.....	.....	3.68
Waynesburgh	66	.....	40.5	5.10
Wellsborough*	62	4	34.0	2.28
West Chester	69	18	39.4	5.41
Westtown	70	19	40.1	2.39
Wilkes Barre	66	12	37.0	3.00
Wysox	63	10	34.2	2.46
York	70	19	39.1	2.85
Rhode Island.				
Bristol	59	12	35.7	2.51
Fort Adams	64	7	35.1	2.41
Kingston (1)	64	10	35.3	3.30
Kingston (2)	63	8	34.0	3.54
Lonsdale	.....	.....	.....	3.26
Newport	62	12	37.2	.....
Olneyville	70	10	36.5	.....
Pawtucket	.....	.....	.....	3.33
Providence (1)	65	10	35.1	3.35
Providence (2)	64	5	33.8	3.72
Woonsocket	61	1	32.6	3.48
South Carolina.				
Aiken	82	35	58.3	1.85
Belmont	79	31	55.0	2.35
Brewer Mine	81	29	57.0	1.78
Cheraw†	79	30	57.0	1.30
Conway	.....	.....	.....	0.85
Evergreen*	76	24	52.4	4.64
Florence†	.....	.....	.....	1.92
Greenville†	.....	.....	.....	5.35
Greenwood†	80	36	56.8	1.88
Hardeeville	83	38	61.4	1.05
Jacksonborough	.....	.....	.....	1.01
Kirkwood*	.....	33	51.8	2.29
Port Royal*†	74	39	59.9	0.96
Simpsonville	80	29	54.5	5.69
Spartanburgh (1)	78	21	52.2	5.00
Spartanburgh (2)†	78	30	58.4	5.12
Statesburgh	80	34	56.6	1.65
Trial	82	34	54.5	1.51
Walhalla	72	33	54.1	.....
Winnsborough	76	32	54.4	3.24
Yorkville	82	27	53.4	4.54
South Dakota.				
Alexandria	50	−25	17.0	.....
Canton	58	−23	21.3	0.10
Clark	50	−20	11.6	T.
De Smet*	.....	−17	10.3	0.50
Flandreau	.....	.....	.....	0.15
Fort Bennett	55	−28	16.2	1.30
Fort Meade	63	−29	20.0	0.46
Fort Randall	59	−23	21.3	0.12
Fort Sully	56	−31	17.5	0.20
Kimball	56	−27	12.9	0.18
Onida*	46	−28	12.3	.....
Parkston	58	−29	18.3	0.20
Scranton	44	−33	10.2	0.60
Spearfish*	62	−23	21.8	0.75
Vermillion	58	−25	21.6	0.55
Webster	50	−28	14.6	0.53
Wolsey*	48	−28	13.0	0.08
Woonsocket	48	−29	13.2	0.15
Tennessee.				
Andersonville	71	26	50.1	7.92
Arlington†	.....	.....	.....	11.20
Ashwood*†	75	24	51.4	10.34
Austin†	75	24	51.4	9.13
Carthage†	.....	.....	.....	9.28
Charleston†	.....	.....	.....	9.20
Clarksville	74	22	47.5	9.35
Clinton†	.....	.....	.....	9.83
Cog Hill	78	30	52.0	6.40
Columbia†	.....	.....	.....	11.01
Covington (1)	73	26	49.7	10.72
Cumberland Gap	74	28	50.0	9.98
Dunlap	.....	.....	.....	8.89
Dyersburgh†	73	23	46.2	8.05
Fayetteville	78	28	51.6	7.56
Florence Station	75	26	50.2	10.96
Grand Junction†	.....	.....	.....	8.90
Greeneville	78	26	49.9	7.18
Grief	74	28	49.3	9.44
Hohenwald	78	18	48.2	11.43
Jacksborough	73	24	50.5	9.07
Johnsonville†	.....	.....	.....	5.85
Kingston (1)	.....	.....	.....	11.09
Kingston Springs	74	21	50.8	9.39
Lawrenceburgh	74	22	49.4	15.75
Lewisburgh	74	23	50.1	8.42
Loudon†	.....	.....	.....	9.41
Lynnville	76	20	47.8	7.45

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Tennessee—Cont'd.	°	°	°	*Ins.*
McKenzie	74	26	49.6	8.30
Milan (1)	74	24	48.2	8.14
Nunnelly	75	22	49.1	7.34
Parksville	74	27	53.1	8.32
Riddleton	75	23	50.6	9.87
Rockwood †				10.35
Rogersville	70	26	48.5	7.17
Rugby	72	20	47.0	11.75
Sharp's	76	28	51.5	9.94
Springdale	72	26	48.9	7.07
Strawberry Plains†				7.31
Trenton	74	23	47.0	8.50
Watkins	78	25	51.5	10.28
Waynesborough	74	24	49.5	9.00
Woodstock	77	27	49.7	6.75
Texas.				
Austin (1)	80	22	60.6	4.54
Austin (2) *	81	22	59.2	.....
Brazoria †	83	30	61.9	4.08
Brenham †	83	23	63.0	3.45
Brownwood†	81	17	53.5	2.19
Caddo Peak *	83	14	52.2	2.30
Camp Del Rio	90	18	63.2	.....
Camp Eagle Pass	93	27	64.2	0.22
C'p Peña Colorado	83	16	48.7	.....
Childress	86	5	48.0	0.28
College Station	84	30	62.4	3.28
Columbia Station	82	30	63.6	3.45
Corsicana (2)	85	30	69.0	4.67
Dallas (1)	82	18	55.1	2.35
Dallas (2)	84	11	55.1	3.70
Decatur †	84	10	50.0	1.95
Duval	85	21	60.6	3.55
Edinburgh †				0.00
Epworth †	77	10	47.1	0.62
Forestburgh *		14	45.4	1.87
Fort Bliss	84	20	51.9	0.10
Fort Brown	89	35	67.0	1.15
Fort Clark	83	25	60.0	0.55
Fort Davis	80	19	52.6	T.
Fort Elliott	78	2	41.6	0.02
Fort Hancock	83	7	47.4	0.00
Fort McIntosh	86	30	64.1	0.05
Fort Ringgold	99	25	66.4	0.94
Fort Worth	85	9	56.3	1.04
Fredericksburgh	82	20	54.4	3.58
Gallinas †	86	25	59.0	3.17
Graham †	85	11	49.6	1.41
Hartley	75	— 1	37.8	.....
Hearne †	81	20	56.8	3.35
Houston †	82	26	62.6	3.60
Howe	79	12	49.6	3.06
Huntsville†	82	21	62.0	3.92
La Grange		29	61.4	2.62
Lampasas	86	17	58.1	3.31
Longview †	82	20	57.4	12.85
Menardville *†	82	16	52.2	1.47
Merkel		15	45.4	0.80
Mesquite	81	16	55.1	3.71
Miami †				0.00
New Braunfels	80	24	59.8	2.40
New Ulm	84	22	61.0	3.09
Ochiltree *	60	— 3	32.1	.....
Panhandle †	77	— 2	39.3	0.04
Panter	88	14	50.4	1.32
Round Rock	82	20	58.4	1.90
San Antonio	82	24	62.3	2.90
Silver Falls	84	9	47.7	0.50
Tyler	81	16	57.8	1.30
Waco (2) †	80	16	58.1	4.80
Utah.				
Alta	44	—12	27.8	§
Beaver †	72	—18	34.3	0.67
Bingham †				2.20
Blue Creek *	39	2	34.8	0.85
Corinne *	54	—10	30.6	1.55
Fort Douglas	58	— 6	33.6	2.05
Fort DuCheane	48	2	29.2	0.27
Kelton *	56	—14	31.7	0.65
Levan		— 8	29.0	1.15
Loseer †	63	—10	28.6	2.40
Moab	62	— 3	38.8	1.28
Mount Carmel *†		— 8	29.2	1.94
Mount Pleasant	39	—20	22.5	3.46
Nephi †	55	—20	29.1	0.63
Ogden (1) *	60	—16	30.2	3.92
Ogden (2) *	67	—11	36.2	4.05
Park City				0.80
Price †				0.05
Promontory *	56	— 6	29.9	0.70
Provo City				0.30
Saint George †	71	13	43.6	1.05
Stockton				0.80
Terrace *	45	—12	29.7	0.45
Vermont.				
Brattleborough (1)	58	— 4	26.1	3.98
Brattleborough (2)	56	— 4	29.4	.....
Burlington	51	— 4	26.2	1.98
Vermont—Cont'd.	°	°	°	*Ins.*
Chelsea *	48	— 6	24.2	3.85
Cornwall				3.80
East Berkshire †	49	—18	19.5	3.89
Hartland	56	— 7	26.2	3.24
Jacksonville	51	5	25.4	6.13
Lunenburgh *	48	— 8	24.7	2.68
Strafford *	46	— 8	22.1	4.40
Vernon	58	— 4	30.6	4.93
Weathersfield C'tre	52	— 7	24.2	.....
Virginia.				
Abingdon				5.43
Birdsnest *	74	28	50.2	1.90
Bolar *	61	12	36.3	4.45
Christiansburgh †				3.99
Dale Enterprise †	75	18	44.8	3.83
Fall Creek Depot	79	30	55.4	3.70
Fort Monroe	73	29	48.9	1.90
Fort Myer	73	21	43.3	4.07
Lexington †	74	20	45.3	5.13
Liberty		25	44.0	4.69
Marion	67	20	45.0	6.66
Mossingford †		21	44.3	3.79
Nottaway C. H.	79	23	47.0	4.43
Petersburgh †	76	26	47.1	2.70
Richmond †	80	23	49.9	3.13
Salem	68	28	46.9	6.06
Smithfield *	80	28	51.9	1.90
Spottsville *	79	28	50.2	3.00
Summit	73	16	42.0	.....
University of Va.				0.45
Woodstock †				4.87
Washington.				
Blakeley †	52	12	35.8	4.88
Doe Bay	51	16	35.6	1.97
Fort Canby	55	18	42.6	5.60
Fort Spokane	51	—21	22.2	1.08
Fort Townsend	52	9	34.8	1.91
Fort Walla Walla	65	—12	30.4	1.85
Vancouver B'ks	59	6	37.8	7.81
Vashon	50	18	36.8	2.69
West Indies.				
Grand Turk Island‡	81	79	79.9	0.32
Hamilton, Bermuda	72	49	63.8	2.92
West Virginia.				
Buckhannon †				6.16
Charleston †				6.98
Ella *	63	16	40.9	5.12
Glenville				6.97
Harper's Ferry †				3.09
Hinton				0.43?
Kingwood *	70	12	36.6	.....
Morgantown †				5.87
Oceana	70	24	45.8	7.99
Pleasant Hill *	68	10	37.0	.....
Point Pleasant †				6.08
Rowlesburgh (1) †				5.54
Rowlesburgh (2) *		28	44.2	.....
Seven Pines	66	22	43.9	.....
Tannery *	69	16	42.4	.....
Tyler Creek *	76	23	47.5	.....
Weston †				5.73
Wheeling †				4.70
White Sulp'r Sp'gs				4.71
Wisconsin.				
Butternut *		— 7	15.0	5.42
Cadiz *		6	25.4	.....
Chippewa Falls †				0.66
Delavan	51	— 3	26.2	1.98
Embarrass *	43	—10	20.8	3.10
Glasgow		1	24.4	1.30
Greenwood †	48	—18	21.2	2.48
Haywood	55	—14	19.4	0.96
Honey Creek *	56	— 4	28.1	0.89
Lincoln *		0	24.4	1.19
Madison	55	— 4	26.1	2.01
Manitowoc	53	— 9	29.0	2.88
Medford †				1.56
Neillsville *	48	—18	20.3	1.60
Oshkosh	46	— 6	25.9	2.70
Phillips †				1.52
Portage †				1.53
Summit Lake * †	56	—12	19.2	2.35
Wauconsta		— 8	22.9	2.60
Wausau	49	1	23.6	0.90
Wauzeka *			27.8	3.10
Wyoming.				
Camp Pilot Butte	54	—15	23.2	1.25
Camp Sheridan	40	—30	17.7	6.65
Carbon *	49	—16	22.6	2.26
Carter †				0.65
Fort Bridger	48	—22	22.4	1.60
Fort D. A. Russell	55	—31	24.2	0.24
Fort McKinney	64	—22	22.0	0.72
Fort Washakie	60	—24	26.8	0.16
Lander	58	—25	25.6	0.32
Lusk †	61	—26	23.0	0.46
Saratoga *	52	—23	22.6	4.25
Wheatland	58			1.23

Reports received too late to be used in general discussion of weather for February, 1890.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Arizona.	°	°	°	*Ins.*
Chiri Cahua Mts				0.00
Colorado.				
Platoro				7.70?
Georgia.				
Andersonville	99 *c*	40 *c*	72.4 *c*	0.95
Iowa.				
Sac City †	55	—15	20.9	0.65
Mexico.				
Mazatlan	77	61	69.1	0.00
Mexico	79	34	56.4	0.04
Topolobampo	79	57	67.6	0.00
Montana.				
Fort Assinniboine	42	—40	1.3	0.69
Nebraska.				
Bingham *	58	—19	22.1	0.10
New Mexico.				
Antelope Springs				0.56
Bernalillo				1.00
Cuba				0.75
Embudo				0.18
Estalina Springs				0.15
Magdalena				0.10
Monero				2.07
Pojuaque				0.63
San Marcial (near)				0.20
Taos				0.62
Tres Piedras				2.15
New York.				
Hess Road Station †	58	9	29.3	3.88
Oregon.				
Ashland (2)	53	14	36.6	5.42
Beulah	47	—10	27.3	2.08
Oregon—Cont'd.	°	°	°	*Ins.*
Cascade Locks *			35.3	22.26
Corvallis	53	15	37.7	8.88
Creswell *	57	12	35.6	9.75
Forest Grove	58	8	37.3	7.85
Gardiner	56	20	41.9	14.33
Grass Valley	50	—17	26.8	4.95
Hood River	53	— 3	32.2	8.10
Hubbard	56	10	37.5	7.96
Huntington	52	—15	25.4	1.86
Jacksonville	53	14	35.2	8.03
La Grande	55	—19	30.1	2.83
Lone Rock	54	—22	27.2	2.64
North Powder	52	—26	26.2	2.04
Pendleton	64	—13	30.1	1.52
Saint Helens	58	10	37.8	7.84
Silver Lake	48	—30	24.0	2.74
Telocaset				2.21
The Dalles	55	— 2	30.9	4.33
Toledo	67	14	41.4	10.35
Vernonia *	52	4	33.7	10.04
Weston	61	—11	28.5	3.26
Texas.				
Brady †	85 *j*	15 *j*	48.7 *k*	1.91
Gainesville	79	11	51.2	4.25
Washington.				
Waterville	48	—19	18.6	0.89
Wisconsin.				
Grantsburgh †	48	—15	17.5	1.70
Richland	52	— 7	25.8	1.38
Wyoming.				
Sundance		—22	17.6	0.52

Reports received too late for publication in January, 1890.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alaska.				
Killisnoo	40	1	20.4	2.05
Arizona.				
American Flag				2.70
Bisbee				2.34
Calabasas				2.62
Chiri Cahua Mts				3.80
Chloride				1.60
Dripping Springs				2.21
Dudleyville				1.63
Gillette				1.68
Oro				1.23
Payson				2.44
Peoria	74	25	46.3	0.70
Saint John's				0.20
Show Low				1.85
Silver King				3.77
Simmons				1.00
Tempe				0.87
Tres Alamos				1.80
Wood Canon				2.70
California.				16.85
Arcata	52	27	38.1	3.71
Beaumont	50	20	35.8	17.18
Delta	43	26	33.7	23.60
Dunsmuir	40	2	25.8	5.60
Edgewood	59	29	45.9	6.83
Galt	60	23	43.2	19.28
Glen Ellen	48	— 6	27.4	6.00
Hornbrook				8.11
Loomis	48	— 6	22.1	3.70
Montague	55	17	30.2	7.93
Mount Hamilton	53	30	50.1	5.53
Ontario	63	27	46.6	6.05
Pleasanton *	78	22	50.4	.....
Salton	68	31	50.0	6.02
Sonoma *c*	58	24	42.1	11.74
Vacaville	44	6	25.9	11.86
Walla Walla Ck				1.52
Florida.				
Homeland	83	50	67.6	0.00
San Antonio	81	50	64.8	1.10
Georgia.				
Thomasville (1)	79	34	61.0	0.60
Idaho.				
Kootenai	40	—10	16.1	2.79
Illinois.				
Palestine	71	9	40.7	9.20
Indiana.				
Laconia	68	14	43.4	6.60
Indian Territory.				
Eufaula				1.10
Iowa.				
Ames	47	—20	18.1	1.95
Carson	48	0	19.4	1.30
Osage				1.01
Kansas.				
Augusta	70	— 2	39.1	0.35
Bucklin				1.39
Eureka Ranch	66	—11	25.5	0.58
Havensville	56	2	24.3	2.25
Independence	74	2	35.0	3.17
Lakin	75	0	34.2	.....
Wellington	75	2	31.0	2.40
Nebraska.				
Lincoln	53	—16	18.6	0.86
Nevada.				
Yount's Ranch	65	18	40.8	0.40
New Mexico.				
Albuquerque	67	8	34.5	.....
New York.				
Ogdensburgh	56	—16	17.6	1.80
Oregon.				
Ashland (1)	47	10	29.3	3.07
Ashland (2)	48	5	30.2	3.66
Bandon	54	22	41.3	20.75
Ellensburgh			35.9	31.84
Grant's Pass	51	0	32.2	13.88
Jacksonville	48	12	30.0	8.46
Silver Lake	40	—28	19.7	1.03
Siskiyou	38	11	27.6	12.80
Tillamook	54	15	35.7	19.55
Toledo	65	14	39.2	20.69
Texas.				
Brady	82 *j*	11 *j*	52.6 *j*	0.42
Brownwood	80	17	53.1	0.59
Childress	88	20	46.2	.....
Gainesville	80	13	50.9	0.94
Menardville	78	12	52.1	.....
Utah.				
Alta	38	— 5	19.8	§
Blue Creek	44	— 6	21.1	2.00
Mount Pleasant	33	1	15.0	1.49
Washington.				
Vashon	46	18	35.0	0.43
Wisconsin.				
Wausau	43	0	18.6	1.60
Colony Surinam, S.A.				
Burnside Coronie	86	70	77.7	6.11

Letters of the alphabet denote the number of days missing from the record, thus: the letter *c* indicates three days missing in a thirty-one day month, etc., etc.
* Extremes of temperature from observed readings. † Signal Service instruments.
‡ One observation daily at 10.00 a. m. § Rainfall estimated at twelve inches.

Table of miscellaneous meteorological data for February, 1890—Signal Service observations.

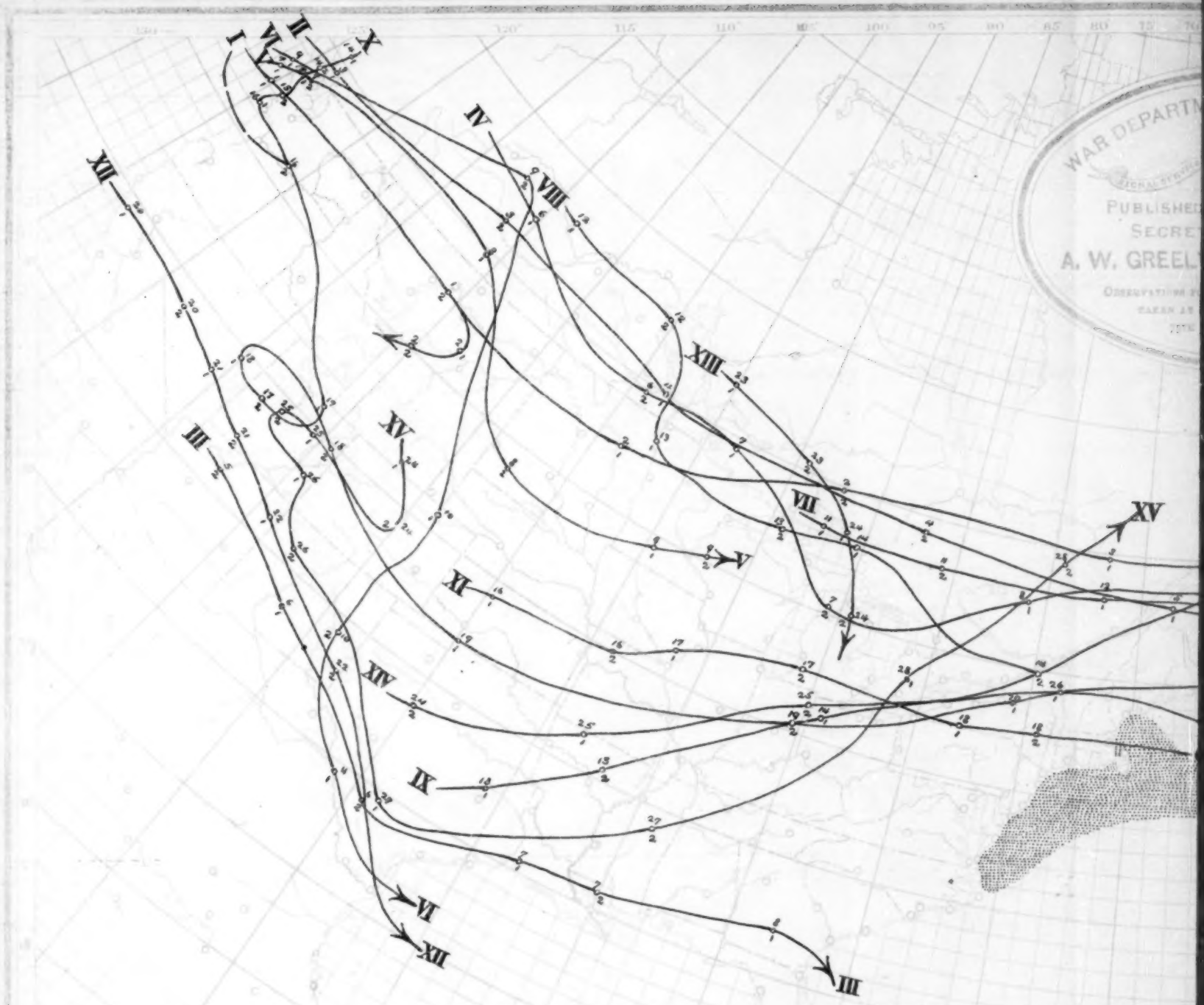
Stations and districts.	Elevation above sea-level, feet.	Pressure, in inches. Mean actual.	Pressure. Mean reduced.	Pressure. Monthly range.	Temperature of air, in degrees Fahrenheit. Monthly mean.	Temp. Departure from normal.	Temp. Maximum.	Temp. Mean maximum.	Temp. Minimum.	Temp. Mean minimum.	Temp. Greatest daily range.	Temp. Least daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal precipitation.	Wind. Total movement, miles.	Wind. Prevailing direction.	Wind. Maximum velocity. Miles per hour.	Max. velocity. Direction.	Max. velocity. Date.	Cloudless days.	Partly cloudy days.	Cloudy days.	Days with rainfall.	Average cloudiness, tenths. 8 a. m.	Average cloudiness. 8 p. m.	Precipitat'n data since opening of station. Length of record, years.	Greatest for month.	Year.	Least for month.	Year.
New England.					32.1	+ 4.6									3.11	− 1.20																
Eastport	53	29.99	30.05	1.53	23.4	+ 1.4	48	30.4	− 2	16.3	34	2	15.7	74.4	4.58	+ 0.49	9,626	nw.	46	se.	20	9	9	10	16	4.7	4.2	17	9.38	1884	1.34	1877
Portland	99	29.96	30.07	1.48	26.6	+ 1.6	58	33.7	0	19.5	29	1	19.8	77.7	4.04	+ 0.38	6,511	n.	43	s.	14	7	10	11	16	5.2	5.1	19	6.92	1884	0.35	1872
Manchester	247	29.82	30.09	1.42	28.2	......	57	36.6	− 6	19.8	46	5	20.5	78.4	3.96	....	4,630	nw.	36	w.	5	8	6	14	15	6.7	6.0	3	3.96	1890	1.71	1889
Northfield	872	29.10	30.10	1.41	22.2	......	56	31.8	− 7	12.5	40	2	15.1	75.0	3.29	....	8,311	s.	48	n.	20	3	11	14	16	6.8	6.6	3	3.29	1890	2.18	1889
Boston	125	29.95	30.10	1.34	33.2	+ 5.2	64	41.2	5	25.3	37	3	24.5	74.3	†3.12	− 0.54	9,088	w.	48	w.	5	8	6	14	14	6.0	5.9	20	7.04	1886	0.45	1877
Nantucket	14	30.09	30.10	1.09	35.6	......	55	41.2	12	30.0	22	3	31.6	82.8	2.72	....	9,473	nw.	48	nw.	20	10	6	12	14	6.5	5.1	4	4.23	1889	1.50	1888
Wood's Holl	22	30.09	30.11	1.20	34.5	......	56	40.1	12	28.9	24	2	29.2	82.8	2.84	− 0.58	11,939	nw.	60	nw.	21	8	6	14	17	6.1	5.2	12	6.02	1876	1.79	1888
Vineyard Haven	......	......	......	....	38.4	......	63	47.3	12	29.6	32	6	......	....	2.32	....	......	nw.	....	......	...	9	7	12	14	...	...	4	4.83	1887	2.32	1890
Block Island	26	30.09	30.12	1.16	37.2	+ 6.2	58	43.2	14	31.1	23	3	31.4	82.0	1.50	− 4.32	13,051	nw.	54	nw.	21	10	7	11	14	4.9	5.1	10	9.73	1882	1.14	1888
Narragansett Pier	22	......	......	....	35.5	......	65	45.1	8	25.9	30	6	......	....	3.22	− 2.05	......	nw.	....	......	...	9	12	7	13	...	...	8	10.64	1886	1.75	1885
New Haven	107	30.00	30.12	1.18	35.5	+ 6.5	67	43.1	10	27.9	31	5	28.2	81.0	3.19	− 1.22	5,226	nw.	39	w.	5	5	11	12	16	5.6	6.0	18	6.40	1878	1.07	1877
New London	47	30.05	30.11	1.18	36.8	+ 6.8	65	43.3	14	30.4	27	5	27.4	72.7	2.40	− 1.77	5,234	nw.	48	sw.	8	6	10	12	13	5.4	4.9	20	11.98	1886	0.96	1872
Mid. Atlantic States.					43.6	+ 7.1									3.19	− 0.22																
Albany	85	30.04	30.14	1.35	31.0	+ 5.0	60	38.6	4	23.5	27	7	24.6	79.7	2.52	− 0.08	6,399	nw.	48	se.	14	3	8	17	17	6.4	7.7	17	4.12	1878	0.36	1877
New York City	185	29.91	30.12	1.12	40.4	+ 8.4	69	48.5	17	32.4	40	7	30.2	76.0	3.86	+ 0.05	8,363	nw.	45	sw.	5	5	9	14	9	4.8	5.4	20	6.09	1885	1.45	1872
Harrisburg	377	29.71	30.13	0.98	37.6	......	74	44.6	18	30.7	36	4	30.6	77.4	3.39	....	5,238	nw.	36	nw.	20	3	12	13	11	7.8	5.1	2	3.39	1890	1.48	1889
Philadelphia	117	30.01	30.13	1.00	41.4	+ 6.4	69	49.0	21	33.9	26	7	31.4	74.0	3.39	+ 0.10	7,970	nw.	46	se.	14	7	5	16	13	6.8	4.2	20	5.70	1884	0.84	1877
Atlantic City	53	30.06	30.12	0.95	41.2	+ 7.2	71	47.4	20	35.1	24	5	34.6	79.9	2.43	− 1.03	8,813	sw.	48	s.	14	6	11	11	12	6.1	3.9	17	7.44	1884	0.87	1877
Baltimore	76	30.03	30.12	0.93	43.4	+ 0.4	74	50.3	23	36.4	24	4	33.0	73.2	4.80	+ 1.27	3,661	ne.	24	nw.	21	9	7	12	13	6.8	4.2	20	6.69	1884	1.38	1871
Washington City	112	30.01	30.13	0.89	43.4	+ 7.4	73	51.2	24	35.7	34	5	33.6	74.9	4.20	+ 0.90	4,663	ne.	31	nw.	20	8	5	15	15	7.4	3.5	20	6.84	1884	0.93	1872
Cape Henry	......	......	......	....	52.2	+ 9.2	80	60.9	31	43.6	28	6	......	....	1.33	− 2.20	......	sw.	....	......	...	7	7	14	6	...	...	17	7.34	1874	1.06	1877
Lynchburgh	658	29.41	30.13	0.83	47.2	+ 0.2	74	56.1	25	38.4	35	5	36.2	74.0	4.22	+ 0.74	3,455	sw.	25	nw.	21	8	9	11	13	6.4	4.4	19	9.02	1884	0.42	1877
Norfolk	43	30.09	30.13	0.70	52.4	+ 7.4	79	61.2	30	43.7	33	6	42.4	75.0	1.98	− 1.77	6,934	sw.	42	se.	14	8	10	10	12	7.5	5.1	20	7.33	1872	1.47	1877
S. Atlantic States.					58.0	+ 5.2									1.95	− 1.75																
Charlotte	808	29.28	30.14	0.71	52.8	+ 5.8	79	61.6	28	44.1	30	3	42.8	76.1	3.65	− 0.78	4,410	s.	36	se.	14	12	7	9	11	4.9	4.7	12	6.43	1884	2.76	1886
Hatteras	11	30.13	30.15	0.65	56.4	+ 9.4	73	62.2	39	50.7	24	4	52.2	88.8	3.03	− 1.58	11,053	sw.	60	nw.	8	10	9	9	8	5.8	3.2	16	7.13	1880	1.37	1887
Raleigh	375	29.73	30.14	0.71	52.7	......	80	61.5	29	43.9	33	6	42.7	77.6	2.80	....	5,044	n.	30	sw.	14	4	9	15	13	6.2	5.1	4	4.97	1887	2.80	1890
Southport	......	......	......	....	56.2	+ 7.2	75	63.1	30	49.3	20	6	......	....	1.76	− 1.29	......	sw.	....	......	...	6	13	9	9	...	...	15	6.25	1888	1.64	1882
Wilmington	52	30.09	30.15	0.56	58.4	+ 0.4	80	67.5	32	49.2	33	11	50.2	83.6	1.25	− 2.12	5,708	sw.	36	sw.	14	8	11	9	10	5.0	3.5	20	6.54	1874	1.25	1890
Charleston	52	30.11	30.16	0.51	60.6	+ 5.0	79	67.9	39	53.2	23	6	52.4	85.2	1.28	− 2.24	4,338	sw.	26	ne.	6	12	5	11	5	6.5	3.9	20	10.45	1874	0.92	1883
Columbia	......	......	......	....	57.6	......	82	67.1	32	48.0	27	8	......	....	1.58	....	......	*	....	......	...	5	12	11	6	...	...	3	5.75	1889	1.58	1890
Augusta	183	29.98	30.17	0.58	58.2	+ 5.2	84	68.1	35	48.4	32	2	46.8	76.6	1.88	− 1.91	3,041	s.	22	sw.	14	9	12	7	7	5.5	5.0	20	7.22	1874	1.49	1883
Savannah	87	30.07	30.16	0.50	61.2	+ 5.2	80	70.3	38	52.1	33	4	51.4	81.8	1.02	− 2.12	5,059	sw.	27	ne.	6	16	6	6	7	4.7	3.5	20	9.71	1874	0.78	1882
Jacksonville	43	30.11	30.16	0.47	64.8	+ 3.8	83	74.1	44	55.6	30	6	55.8	83.6	0.51	− 2.76	5,085	n.	36	w.	8	13	9	6	6	4.0	2.4	19	8.93	1875	0.34	1887
Florida Peninsula.					69.4	+ 2.9									1.52	− 0.88																
Cedar Keys	22	30.13	30.15	0.46	65.5	+ 4.5	75	70.4	49	60.6	20	4	60.3	88.4	0.67	− 2.40	6,755	n.	36	se.	8	12	7	9	7	4.9	3.4	11	7.35	1880	0.04	1883
Jupiter	28	30.12	30.15	0.28	70.2	......	84	77.3	54	63.2	23	7	62.0	77.7	2.00	....	5,093	s.	24	se.	27	10	12	6	9	3.6	2.9	3	4.16	1889	2.00	1890
Key West	22	30.11	30.13	0.27	73.3	+ 1.3	80	77.4	65	69.2	14	4	67.0	82.2	2.38	+ 0.65	7,015	e.	37	n.	9	14	11	3	9	4.3	1.8	20	7.19	1872	0.13	1886
Micco a	......	......	......	....	67.8	......	90	78.3	50	57.2	30	8	......	....	0.12	....	......	se.	....	......	...	17	5	5	6	...	...	2	1.65	1889	0.12	1890
Titusville	44	30.12	30.16	0.38	60.6	......	87	75.1	48	58.2	24	4	61.4	89.5	0.83	....	5,787	s.	48	n.	21	19	5	4	5	3.8	2.1	3	7.11	1888	0.83	1890
Eastern Gulf States.					60.8	+ 5.7									3.21	− 1.80																
Atlanta	1,139	28.94	30.14	0.52	54.8	+ 0.8	76	63.3	28	46.3	29	2	45.0	76.5	3.36	− 1.77	6,481	sw.	34	e.	7	6	12	10	11	6.7	4.0	12	10.41	1881	1.53	1886
Pensacola	56	30.01	30.12	0.54	63.0	+ 5.0	76	69.5	37	56.4	24	5	57.8	88.7	2.03	− 2.20	6,303	se.	44	s.	8	13	7	8	9	4.1	3.3	11	8.99	1881	2.03	1890
Auburn	......	......	......	....	58.2	......	79	66.4	29	49.9	26	2	......	....	3.30	....	......	se.	....	......	...	11	4	13	10	...	...	3	6.34	1888	3.36	1890
Mobile	35	30.09	30.13	0.61	61.4	+ 5.4	76	69.2	36	53.6	26	6	55.3	88.3	2.95	− 1.95	6,136	s.	34	se.	13	4	16	8	5	5.0	3.7	20	10.33	1888	1.40	1877
Montgomery	217	29.89	30.12	0.65	59.8	+ 5.8	81	69.4	30	50.2	32	6	48.6	75.0	3.43	− 2.13	4,040	sw.	28	sw.	25	9	7	12	10	4.9	4.5	17	9.97	1873	2.00	1883
Meridian	358	29.72	30.12	0.70	58.0	......	80	67.6	29	48.5	32	8	48.7	80.6	7.78	....	4,539	s.	36	s.	7	10	6	12	10	4.4	4.0	1	.....	.....	.....	....
Vicksburg	222	29.83	30.06	0.80	60.0	+ 6.0	79	68.5	32	51.5	26	8	48.0	71.8	4.59	− 0.54	5,294	s.	38	nw.	27	11	7	10	10	6.2	2.8	19	7.20	1881	0.44	1889
University	......	......	......	....	54.2	......	78	63.3	26	45.2	30	8	......	....	7.55	....	......	*	....	......	...	8	14	6	14	...	...	3	7.55	1890	2.87	1888
New Orleans	52	30.03	30.09	0.64	64.0	+ 5.0	82	72.9	40	55.1	29	4	56.4	84.2	2.27	− 2.23	6,336	se.	39	nw.	7	14	8	6	5	4.1	2.8	20	13.85	1875	0.98	1877
Port Eads	......	......	......	....	66.3	......	79	74.1	40	58.5	30	4	......	....	3.55	....	......	*	....	......	...	0	25	3	3	...	...	3	5.14	1882	0.95	1883
Western Gulf States.					57.5	+ 5.2									4.53	+ 0.46																
Shreveport	249	29.79	30.05	0.77	57.4	+ 5.4	80	66.4	22	48.5	35	5	47.7	76.3	4.63	− 0.14	5,381	s.	38	nw.	27	5	9	11	10	5.4	4.3	19	8.71	1882	2.01	1888
Fort Smith	492	29.55	30.09	0.90	48.0	+ 0.0	78	58.1	7	38.0	36	4	37.7	76.8	6.27	+ 1.84	5,383	e.	36	w.	25	11	5	12	12	5.8	4.8	8	10.72	1884	1.69	1885
Little Rock	309	29.73	30.06	1.01	51.0	+ 4.0	78	58.8	20	43.3	33	4	42.2	76.5	6.48	− 0.06	5,200	s.	36	w.	25	11	6	11	13	5.1	4.3	11	12.74	1882	1.48	1889
Corpus Christi	20	30.02	30.04	0.71	64.0	+ 7.0	85	69.9	30	58.0	20	3	58.2	84.8	2.01	....	9,293	se.	42	nw.	28	4	12	12	7	6.8	4.0	4	3.61	1889	0.17	1887
Galveston	44	30.03	30.07	0.72	63.7	+ 5.7	75	68.4	34	59.0	23	6	58.8	87.0	1.92	− 1.12	8,115	s.	42	n.	7	11	7	10	5	4.4	5.0	19	8.29	1881	0.50	1873
Palestine	511	29.52	30.07	0.73	57.7	+ 4.7	81	67.1	19	48.3	37	4	47.4	75.9	4.95	+ 1.27	5,617	*	27	sw.	14	5	9	14	8	7.0	4.4	9	4.95	1890	2.47	1884
San Antonio	781	29.23	30.05	0.74	60.8	+ 3.8	82	70.4	24	51.1	39	7	47.4	70.8	2.92	+ 1.00	6,577	se.	40	n.	7	5	11	12	11	7.2	4.1	12	4.01	1880	0.33	1883
Rio Grande Valley.					68.8	+ 5.5									0.90	− 0.44																
Brownsville	57	29.97	30.03	0.73	68.6	+ 5.6	89	76.5	36	60.6	31	6	61.0	85.3	1.23	− 0.45	8,201	s.	37	s.	22	3	21	4	5	6.0	5.1	15	7.99	1877	T.	1884
Rio Grande City	230	29.80	30.04	0.78	68.4	+ 5.4	95	80.2	30	56.5	42	8	59.2	82.2	0.57	− 0.44	6,439	s.	42	n.	12	7	18	3	5	5.4	3.8	13	2.86	1877	0.00	1884
Ohio Val. & Tenn.					46.1	+ 6.9									6.98	+ 2.66																
Chattanooga	783	29.31	30.15	0.65	54.0	+ 8.0	78	63.5	27	44.5	36	6	45.2	79.4	7.85	+ 2.55	4,224	sw.	42	sw.	14	6	10	12	12	6.2	5.0	12	8.81	1884	2.75	1880
Knoxville	980	29.08	30.14	0.67	51.8	+ 7.8	76	60.4	26	43.3	32	4	42.4	77.2	8.12	+ 3.22	5,155	sw.	36	sw.	14	6	8	14	15	6.7	5.8	20	12.52	1873	1.01	1878
Memphis	349	29.72	30.10	0.99	51.4	+ 5.4	79	58.6	26	44.2	28	3	41.8	76.1	8.13	+ 2.57	5,577	n.	42	s.	13	9	9	10	13	6.2	4.4	19	9.92	1882	1.33	1876
Nashville	553	29.52	30.11	0.79	49.2	+ 0.2	77	57.6	23	40.9	30	4	40.9	79.0	10.95	+ 5.91	4,802	se.	36	s.	14	4	6	18	13	5.9	6.7	19	12.37	1880	1.06	1877
Lexington	......	28.95	......	0.83	45.1	......	70	52.6	19	37.6	35	2	37.6	80.8	8.13	....	10,441	nw.	60	se.	25	3	7	18	17	8.1	6.0	7	8.13	1890	1.66	1876
Louisville	551	29.50	30.10	0.95	46.5	+ 6.5	73	54.6	22	38.4	36	4	35.9	72.4	6.25	+ 1.67	5,004	*	33	sw.	25	6	6	16	16	7.2	5.7	17	9.84	1884	0.44	1877
Indianapolis	766	29.24	30.08	1.01	38.8	+ 6.8	69	45.3	14	32.2	28	3	32.0	79.0	5.28	+ 1.86	4,522	*	30	nw.	20	7	3	18	16	7.6	5.9	19	7.28	1882	1.21	1877
Cincinnati	628	29.41	30.10	0.93	43.1	+ 6.1	70	51.9	18	34.3	36	5	34.5	70.5	4.63	+ 0.73	5,589	sw.	27	nw.	20	6	3	19	14	7.4	6.2	20	8.87	1884	0.67	1877
Columbus	837	29.17	30.10	0.95	40.6	+ 7.6	66	47.6	17	33.0	29	3	32.0	74.6	6.12	+ 2.51	5,252	s.	30	sw.	20	7	5	16	16	7.6	5.4	12	6.48	1887	1.06	1889
Pittsburgh	847	29.15	30.08	0.80	42.0	+ 8.0	68	50.5	16	33.4	31	7	35.0	78.5	5.52	+ 2.90	3,885	n.	24	n.	5	5	5	18	15	8.2	5.0	20	6.52	1887	0.85	1871
Parkersburgh	638	29.40	30.11	0.88	43.4	......	70	51.7	18	35.2	41	4	37.2	82.5	5.67	....	4,929	sw.	34	w.	20	6	4	18	18	7.4	6.0	2	5.67	1890	2.88	1889
Lower Lake Region.					33.1	+ 6.0									3.34	+ 0.61																
Buffalo	690	29.27	30.03	1.02	31.4	+ 6.4	60	38.4	13	24.4	35	2	25.3	80.4	3.66	+ 1.01	9,647	ne.	59	w.	8	1	12	15	17	8.0	6.1	20	5.51	1887	0.46	1877
Oswego	335	29.68	30.02	1.22	28.6	+ 3.6	60	36.0	5	21.3	34	4	23.8	84.2	3.25	+ 0.77	9,380	se.	48	w.	20	3	5	20	13	8.4	7.7	20	4.81	1880	0.22	1877
Rochester	621	29.37	30.06	1.14	31.6	+ 6.6	65	39.4	11	23.9	40	2	24.4	79.7	3.59	+ 1.03	7,559	nw.	42	nw.	5	1	8	19	20	8.4	7.2	20	5.40	1876	0.46	1877
Erie	714	29.27	30.06	0.90	35.2	+ 6.2	67	43.4	14	27.1	32	5	28.8	83.6	3.60	+ 0.08	9,308	s.	60	se.	7	5	5	18	17	8.9	7.6	17	8.50	1887	0.33	1877
Cleveland	751	29.25	30.09	0.94	36.3	+ 7.3	65	43.7	15	28.9	26	4	29.0	77.4	4.58	+ 1.73	6,263	sw.	36	sw.	4	5	5	18	15	8.8	6.6	20	7.73	1887	0.18	1877
Sandusky	629	29.38	30.08	0.95	35.0	+ 6.0	68	42.8	12	28.4	31	4	28.4	78.2	3.10	− 0.17	7,443	w.	44	nw.	20	5	5	18	12	7.5	6.0	13	8.53	1887	0.83	1885
Toledo	673	29.34	30.09	0.92	35.8	+ 6.8	67	44.0	13	27.5	30	6	27.2	78.7	2.90	+ 0.80	6,576	sw.	40	n.	20	6	9	13	14	7.4	5.8	20	6.84	1887	0.08	1877
Detroit	662	29.32	30.03	1.01	32.4	+ 4.4	63	38.4	12	26.3	31	4	20.1	81.0	2.01	− 0.38	7,460	sw.	38	nw.	5	5	8	15	10	7.0	6.0	20	6.41	1881	0.04	1877
Upper Lake Region.					25.5	+ 6.2									2.36	+ 0.10																
Alpena	609	29.34	30.03	1.31	24.0	+ 7.0	49	30.6	6	17.4	33	3	20.6	87.9	2.23	+ 0.02	8,197	w.	44	w.	5	0	10	18	18	9.3	6.7	18	5.04	1881	0.43	1873
Escanaba	608	......	......	....	21.2	+ 7.2	41	30.7	− 2	11.7	34	10	......	....	1.99	+ 0.59	......	n.	....	......	...	5	6	17	12	...	...	19	2.75	1884	0.30	1877
Grand Haven	621	29.35	30.05	0.98	30.8	+ 5.8	51	36.4	13	25.3	19	4	25.0	81.7	2.29	0.00	8,015	e.	36	nw.	5	3	8	17	18	7.5	6.9	18	6.13	1881	0.05	1875
Lansing	883	29.10	30.09	0.98	31.0	......	61	37.5	10	24.5	26	5	25.2	84.4	1.84	....	5,541	nw.	30	sw.	4	6	11	11	14	7.1	5.4	4	5.91	1887	1.25	1889
Manistee	615	29.34	30.05	1.09	28.0	......	52	32.5	10	23.5	24	1	22.2	80.9	2.55	....	6,856	e.	30	w.	8	6	5	17	15	7.9	5.7	2	2.55	1890	2.53	1889
Marquette	735	29.17	30.00	1.25	20.3	+ 5.3	45	27.0	0	13.6	33	4	14.3	76.7	5.17	+ 3.80	8,433	nw.	42	sw.	2	0	10	18	19	9.0	6.0	18	5.17	1890	0.12	1877
Port Huron	639	29.36	30.07	1.06	30.0	+ 7.0	60	35.9	11	24.2	29	2	24.0	81.4	1.76	− 0.82	8,823	s.	44	sw.	28	6	8	14	13	7.9	6.2	16	4.91	1881	T.	1877
Sault de Ste. Marie	642	29.29	30.03	1.35	16.2	......	42	23.6	−11	8.9	36	4	13.4	89.2	2.91	....	5,369	se.	30	nw.	5	0	8	20	18	8.3	6.7	2	2.91	1890	1.38	1889
Chicago	824	29.16	30.08	0.87	32.4	+ 5.4	59	38.7	3	26.2	22	3	20.2	81.7	2.42	+ 0.03	12,105	sw.	48	w.	5	7	6	15	12	6.8	5.5	20	5.98	1881	0.06	1877
Milwaukee	697	29.28	30.05	0.98	29.0	+ 7.0	59	35.2	− 2	22.9	24	4	23.8	85.0	1.94	+ 0.03	8,174	nw.	44	nw.	5	6	7	15	13	5.8	6.1	20	5.39	1881	0.10	1877
Green Bay	616	29.36	30.06	1.15	22.5	......	44	29.0	− 4	16.0	28	3	17.8	84.3	3.16	....	6,779	s.	39	n.	25	6	5	17	11	6.7	6.1	4	3.99	1887	2.11	1888
Duluth	672	29.30	30.07	1.05	16.6	+ 4.6	52	25.0	−13	8.3	36	6	8.4	73.4	1.09	+ 0.02	6,259	nw.	33	ne.	16	5	10	13	14	6.3	5.1	20	2.71	1884	0.10	1877
Extreme Northwest.					3.2	− 2.1									0.37	− 0.40																
Moorhead	926	29.08	30.16	1.16	4.8	+ 0.8	47	15.7	−26	− 6.1	40	5	− 0.2	83.0	0.40	− 0.46	7,713	n.	48	n.	7	8	6	14	11	6.1	5.1	10	2.13	1881	0.08	1885
Saint Vincent	804	29.23	30.18	1.20	− 3.2	+ 2.2	38	7.6	−36	−14.0	49	5	− 8.9	81.0	0.63	+ 0.19	7,401	nw.	40	nw.	7	12	11	5	8	3.5	5.1	10	1.03	1889	0.10	1885
Bismarck	1,681	28.26	30.19	1.23	3.6	− 6.4	46	14.6	−34	− 7.4	51	5	− 1.8	80.0	0.27	− 0.35	6,837	nw.	64	nw.	4	11	9	8	5	2.6	4.9	16	1.48	1889	0.16	1880
Fort Buford	1,900	28.00	30.17	1.11	0.9	− 8.1	49	13.0	−43	−11.2	40	6	− 3.0	85.8	0.18	− 0.28	6,362	nw.	72	nw.	4	6	12	10	7	5.7	5.2	12	1.10	1881	0.12	1884

Table of miscellaneous meteorological data for February, 1890—Signal Service observations—Continued.

Stations and districts.	Elevation above sea-level, feet.	Pressure, in inches.			Temperature of air, in degrees Fahrenheit.								Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal precipitation.	Wind.					Cloudless days.	Partly cloudy days.	Cloudy days.	Days with rainfall.	Average cloudiness, tenths.		Precipitat'n data since opening of station.				
		Mean actual.	Mean reduced.	Monthly range.	Monthly mean.	Departure from normal.	Maximum.	Mean maximum.	Minimum.	Mean minimum.	Greatest daily range.	Least daily range.					Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					8 a. m.	8 p. m	Length of record, years.	Greatest for month.	Year.	Least for month.	Year.
Ex. northwest-Con.																																
Fort Yates	.....	.....	.....	....	9.0	+ 0.9	54	22.7	−26	− 2.9	49	4	.....	.....	0.35	− 1.10	.....	nw.	....	.....	...	7	17	4	6	...	...	8	4.62	1886	0.35	1890
Upper Miss. Valley.					31.4	+ 1.6									2.01	− 0.12															
Saint Paul	831	29.14	30.08	1.12	18.5	+ 2.5	51	26.8	−12	10.2	37	6	11.8	79.2	0.80	− 0.45	4,412	w.	35	w.	4	6	10	12	10	6.5	5.6	20	2.65	1881	0.01	1877
La Crosse	744	29.27	30.10	1.00	23.8	+ 4.8	53	31.4	− 5	16.1	33	4	16.2	76.8	0.80	− 0.28	5,340	nw.	29	nw.	4	11	9	8	10	6.6	4.7	18	3.35	1875	0.11	1877
Davenport	615	29.41	30.10	0.95	31.4	+ 6.4	63	38.7	4	24.1	27	6	21.9	74.6	1.10	− 0.62	5,065	nw.	32	nw.	7	7	9	12	10	6.1	4.5	19	4.87	1887	0.07	1877
Des Moines	869	29.14	30.10	1.01	26.9	+ 3.9	59	35.1	− 5	18.7	31	6	16.7	71.0	1.17	− 0.28	5,718	nw.	34	nw.	7	12	8	8	4	4.8	4.4	12	2.68	1881	0.17	1880
Dubuque	651	29.35	30.08	0.98	28.6	+ 0.6	58	30.3	− 1	20.9	28	6	22.8	83.8	1.25	− 0.38	3,927	nw.	24	n.	25	6	7	15	13	5.5	4.6	17	3.75	1881	0.26	1877
Keokuk	613	29.44	30.13	0.96	32.8	+ 4.8	67	40.8	− 1	24.9	29	4	25.6	80.4	1.09	− 0.83	4,610	nw.	26	w.	25	8	4	16	8	5.6	6.1	19	6.13	1883	0.15	1877
Cairo	359	29.70	30.09	0.92	44.6	+ 4.6	75	51.7	18	37.6	28	2	30.4	76.6	7.57	+ 3.43	6,363	n.	30	sw.	14	6	5	17	14	7.4	6.2	19	10.14	1882	0.25	1877
Springfield, Ill.	644	29.39	30.09	0.95	35.8	+ 3.8	71	43.5	4	28.2	24	6	27.8	78.5	2.01	− 2.16	6,803	nw.	36	nw.	19	7	4	17	10	7.0	6.4	11	7.92	1882	0.94	1885
Saint Louis	571	29.49	30.12	1.00	40.2	+ 4.2	78	48.4	4	32.0	26	7	31.3	76.3	2.86	− 0.05	8,045	sw.	37	nw.	19	7	7	14	12	5.9	5.8	20	8.94	1882	0.87	1885
Missouri Valley.					21.3	+ 2.1									0.38	− 0.38															
Columbia	.....	.....	.....	0.89	37.6	.....	75	48.1	− 1	27.0	43	8	29.9	78.2	2.34	.....	5,699	nw.	32	nw.	8	5	6	17	12	...	6.2	1	.....	.....	.....	.....
Kansas City	947	29.07	30.13	0.96	34.0	.....	71	41.6	0	26.4	30	2	24.3	71.8	0.53	.....	5,816	s.	28	s.	10	7	9	12	9	5.8	5.4	2	1.91	1889	0.53	1890
Springfield, Mo.	1,356	28.61	30.09	0.91	40.2	.....	76	49.5	− 2	30.9	36	4	32.0	82.6	5.22	.....	7,478	se.	36	w.	25	6	4	18	13	6.1	6.0	5	7.29	1882	1.22	1888
Leavenworth	842	29.21	30.13	0.97	32.3	+ 1.3	70	40.5	− 3	24.1	37	3	25.3	80.2	0.54	− 0.94	3,307	n.	27	nw.	7	9	2	17	6	5.8	6.1	19	4.84	1881	0.20	1876
Topeka	.....	.....	.....	....	32.5	.....	73	43.9	− 5	21.1	43	10	.....	.....	0.44	.....	.....	n.	.....	.....	...	6	10	12	9	...	...	3	1.84	1889	0.44	1890
Omaha	1,113	28.92	30.15	1.06	25.2	+ 1.2	64	33.5	−12	17.0	33	3	15.6	71.9	0.54	− 0.26	6,367	nw.	38	nw.	7	8	8	12	8	4.7	4.9	20	3.09	1881	0.04	1873
Crete	.....	.....	.....	....	26.9	.....	68	38.3	−14	15.5	38	11	.....	.....	0.15	.....	.....	nw.	....	.....	...	7	7	14	4	...	...	3	0.61	1888	0.15	1890
Valentine	2,613	27.29	30.18	1.02	23.0	.....	66	33.9	−22	12.1	42	6	9.6	63.0	1.49	.....	8,364	n.	44	nw.	7	9	8	11	10	5.7	5.0	5	1.49	1890	0.25	1889
Sioux City	1,158	28.83	30.16	1.13	22.9	.....	62	32.4	−18	13.4	35	7	10.6	66.4	0.40	.....	7,512	n.	36	s.	2	9	8	11	6	5.5	4.4	1	.....	.....	.....	.....
Fort Sully	1,600	28.36	30.15	1.10	15.0	+ 5.0	56	26.0	−30	3.9	49	4	5.4	72.2	0.20	− 0.08	6,235	nw.	43	nw.	7	9	13	6	6	5.0	5.2	12	0.91	1875	0.03	1877
Huron	1,307	28.67	30.15	1.16	13.0	+ 1.0	45	23.1	−24	2.9	35	5	4.9	74.8	0.18	− 0.29	7,894	n.	45	nw.	7	7	12	9	4	4.8	4.1	9	1.11	1887	0.16	1886
Yankton	1,232	28.75	30.12	1.16	21.0	+ 2.0	60	30.8	−17	11.3	38	5	11.0	72.6	0.46	− 0.32	7,947	nw.	39	n.	7	5	10	13	5	6.6	5.7	17	2.70	1881	0.09	1882
Northern Slope.					18.1	− 3.8									0.57	− 0.66															
Ft. Assinniboine	2,690	27.16	30.16	1.14	2.8	−11.2	50	13.0	−40	− 7.5	54	2	− 5.6	75.7	0.68	+ 0.03	7,584	sw.	48	sw.	3	8	11	9	9	4.6	6.2	10	1.47	1888	0.05	1887
Fort Custer	3,040	26.80	30.09	1.06	17.6	− 3.4	64	28.8	−34	6.3	49	7	12.3	85.0	0.24	− 0.24	6,088	n.	52	sw.	4	6	10	12	6	7.0	5.5	11	1.29	1884	0.02	1882
Fort Maginnis	4,340	.....	.....	....	15.8	− 4.2	60	30.6	−43	0.9	69	10	.....	.....	0.60	− 0.82	.....	nw.	....	.....	...	11	6	11	6	...	...	8	3.37	1888	0.59	1883
Helena	4,069	25.76	30.08	1.08	10.8	− 6.2	57	24.1	−29	9.4	34	5	6.0	66.6	0.82	+ 0.19	4,112	nw.	60	w.	6	13	12	3	5	3.7	4.8	10	1.33	1884	0.12	1888
Rapid City	3,280	26.57	30.13	0.99	22.5	.....	66	34.9	−27	10.1	46	9	8.2	64.6	0.66	− 0.04	5,946	e.	48	ne.	4	3	10	15	10	6.6	6.0	6	1.62	1888	0.19	1882
Cheyenne	6,105	23.87	30.01	0.87	28.2	+ 1.2	61	38.9	−20	17.4	36	8	5.1	47.6	0.59	+ 0.31	9,135	w.	64	w.	4	6	13	9	9	5.0	5.2	19	1.31	1885	0.02	1873
Fort McKinney	5,000	24.81	30.06	0.90	23.0	.....	66	34.8	−22	11.1	48	9	11.2	71.2	0.50	.....	6,245	nw.	84	sw.	4	7	8	13	7	6.0	5.9	3	0.81	1889	0.50	*
Fort Washakie	5,580	24.32	30.02	1.07	25.4	.....	60	35.8	−24	15.0	38	6	10.4	60.9	0.31	.....	4,985	sw.	50	sw.	3	10	9	9	3	5.0	5.0	4	0.94	1888	0.25	1889
North Platte	2,841	27.08	30.13	0.94	27.2	+ 1.2	69	39.1	−16	15.2	42	4	14.0	68.4	0.38	+ 0.01	6,154	nw.	42	ne.	24	6	15	7	4	6.5	4.6	16	1.38	1883	0.03	1880
Middle Slope.					38.0	+ 2.7									0.28	− 0.39															
Colorado Springs	.....	.....	.....	....	32.3	.....	77	46.5	−12	18.1	42	10	13.0	58.2	0.13	− 0.31	.....	.....	....	.....	...	16	10	2	3	3.0	3.2	6	0.60	1889	0.13	1890
Denver	5,281	24.65	30.00	0.99	34.0	+ 2.0	77	46.8	− 8	21.1	40	10	13.6	55.2	0.46	− 0.02	5,280	s.	48	n.	10	8	12	8	7	4.5	4.9	19	1.22	1881	0.11	1876
Pueblo	4,753	25.16	30.08	0.98	34.6	.....	71	49.7	−14	19.4	47	11	7.1	43.8	0.25	.....	6,798	w.	53	n.	10	9	13	6	3	3.6	3.8	2	0.25	1890	c. 24	1889
Concordia	1,410	28.60	30.18	1.00	29.4	.....	71	39.1	− 7	19.7	37	7	19.6	76.7	0.25	− 0.44	5,206	n.	30	n.	25	13	10	5	4	4.5	3.8	5	0.88	1886	0.25	1890
Dodge City	2,523	27.38	30.12	0.95	32.4	+ 0.4	78	45.0	− 6	19.8	46	5	18.7	69.8	0.39	− 0.16	7,247	n.	48	n.	10	9	12	7	5	5.5	4.5	16	1.63	1881	T.	1880
Wichita	1,360	28.60	30.11	0.94	35.3	.....	73	44.8	0	25.8	34	5	25.1	74.0	0.35	.....	6,169	n.	38	nw.	7	7	7	14	5	5.7	5.0	2	0.57	1889	0.35	1890
Fort Reno	.....	.....	.....	....	45.2	+ 7.2	83	60.0	1	30.5	48	15	.....	.....	0.31	− 0.70	.....	nw.	....	.....	...	17	6	5	5	...	...	8	3.05	1889	0.31	1890
Fort Supply	.....	.....	.....	....	40.2	+ 1.2	78	54.4	2	25.9	46	12	.....	.....	0.15	− 0.70	.....	s.	....	.....	...	7	12	9	2	...	...	9	1.48	1883	0.02	1887
Fort Elliott	2,690	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	11	1.44	1886	0.05	1880
Southern Slope.					43.2	+ 2.2									0.78	− 0.58															
Fort Sill	1,200	28.78	30.06	0.89	45.0	+ 3.0	82	57.0	6	32.9	41	2	31.6	73.0	0.46	− 1.14	8,888	n.	37	s.	10	15	8	5	4	3.9	2.6	13	3.45	1881	0.21	1879
Abilene	1,748	28.21	30.05	0.80	51.4	+ 1.4	85	62.2	12	40.7	33	3	36.0	66.6	1.81	+ 0.40	9,764	s.	36	n.	7	10	13	5	5	5.0	3.4	5	2.62	1889	0.61	1886
Fort Stanton	6,150	23.91	29.89	0.64	42.2	.....	76	54.6	13	29.7	46	10	20.4	52.4	0.08	− 0.40	6,981	sw.	54	sw.	26	17	8	3	2	2.1	2.4	7	1.09	1888	0.08	1890
Southern Plateau.					47.2	+ 0.8									1.07	− 0.31															
El Paso	3,796	26.19	29.98	0.67	51.8	+ 1.8	82	66.7	19	37.0	46	10	14.6	27.2	0.02	− 0.50	5,949	nw.	43	nw.	6	22	6	0	1	0.7	1.9	12	1.51	1888	T.	1880
Lava	.....	.....	.....	....	46.4	.....	75	61.8	11	31.0	42	14	.....	.....	0.14	− 0.55	.....	s.	....	.....	...	14	9	5	2	...	...	6	1.75	1888	0.14	1890
Santa Fé	7,026	23.20	30.02	0.63	36.6	+ 3.6	67	46.7	6	26.5	36	7	10.0	43.0	0.58	− 0.20	6,073	n.	36	ne.	7	7	10	11	7	3.6	4.4	18	1.60	1874	0.06	1882
Fort Apache	5,020	.....	.....	....	41.4	+ 1.4	75	56.7	11	26.2	46	11	.....	.....	2.40	+ 0.42	.....	sw.	....	.....	...	10	5	7	6	...	...	12	3.43	1884	0.95	1880
Fort Bowie	.....	.....	.....	....	48.2	+ 1.2	73	58.1	20	38.3	26	12	.....	.....	0.23	− 2.82	.....	sw.	....	.....	...	18	3	7	5	...	...	7	4.96	1884	0.23	1890
Fort Grant	4,860	25.20	30.06	0.47	48.4	+ 2.4	74	58.7	22	38.2	33	8	22.6	41.8	0.46	− 0.85	4,347	w.	36	e.	12	20	3	5	6	2.8	2.4	13	4.62	1884	0.33	1881
Fort McDowell	.....	.....	.....	....	52.8	- 0.2	81	69.3	25	36.4	46	10	.....	.....	1.37	− 0.64	.....	w.	....	.....	...	17	1	10	4	...	...	7	4.37	1884	0.72	1888
Fort Thomas	2,710	.....	.....	....	48.6	+ 0.6	80	64.5	18	32.8	46	12	.....	.....	0.49	− 0.75	.....	*	....	.....	...	17	6	5	5	...	...	10	2.94	1884	0.13	1881
Fort Verde	.....	.....	.....	....	46.2	− 0.8	75	59.6	18	32.8	.....	.....	.....	.....	1.97	+ 0.90	.....	s.	....	.....	...	14	5	9	7	...	...	14	3.59	1884	0.12	1881
Whipple Barracks	5,389	24.71	30.09	0.60	39.2	+ 1.2	73	51.3	9	27.0	41	8	21.6	60.7	3.02	+ 1.53	8,504	sw.	65	sw.	21	16	3	9	7	2.3	3.5	15	6.55	1884	0.01	1876
San Carlos	.....	.....	.....	....	48.4	− 1.6	77	63.6	20	33.1	48	10	.....	.....	1.66	− 0.01	.....	s.	....	.....	...	21	0	7	5	...	...	9	3.83	1884	0.93	1882
Wilcox	.....	.....	.....	....	46.7	− 0.3	80	65.3	15	28.1	50	14	.....	.....	0.35	− 0.97	.....	w.	....	.....	...	21	1	6	3	...	...	6	1.83	1887	0.35	1890
Yuma	141	29.89	30.04	0.60	58.4	+ 0.4	86	70.5	36	46.3	38	10	33.2	44.6	0.80	+ 0.41	5,575	n.	33	n.	10	22	3	3	5	1.5	2.0	15	1.72	1877	0.00	1881
Keeler	3,622	26.31	30.01	0.92	42.1	.....	67	52.4	19	31.8	33	9	21.2	43.6	0.01	.....	6,300	se.	48	nw.	13	25	3	0	1	0.9	2.6	5	1.21	1888	T.	1889
Middle Plateau.					34.0	+ 1.0									1.44	+ 0.57															
Carson City	.....	25.27	.....	1.03	33.0	.....	59	42.6	− 3	23.5	36	7	17.8	58.6	2.39	.....	.....	.....	.....	.....	...	9	9	10	9	4.6	5.3	3	2.39	1890	0.13	1889
Winnemucca	4,340	25.60	30.08	1.08	30.6	.....	57	39.6	−22	21.5	37	6	17.8	61.4	1.48	+ 0.51	9,501	sw.	54	sw.	16	11	5	12	9	4.0	6.0	12	1.59	1881	T.	1889
Fort Du Chesne‡	4,900	24.98	30.02	1.09	29.9	.....	49	39.1	2	20.7	25	11	18.6	72.6	0.44	.....	2,660	se.	38	w.	18	14	11	3	3	4.1	2.4	3	0.61	1888	0.18	1889
Salt Lake City	4,348	25.60	30.06	1.04	33.7	+ 0.7	58	40.6	− 6	26.8	25	5	23.0	66.2	2.05	+ 0.67	3,920	nw.	26	s.	17	5	13	10	12	5.5	5.4	16	3.49	1878	0.38	1877
Taylor's Ranch	.....	.....	.....	....	30.2	.....	57	40.8	− 9	19.7	31	11	.....	.....	1.00	.....	.....	w.	....	.....	...	16	6	6	6	...	...	1	.....	.....	.....	.....
Montrose	5,793	24.21	29.99	0.94	34.2	+ 1.2	62	45.9	−13	22.5	35	11	11.6	43.6	0.78	+ 0.54	4,749	s.	40	s.	18	12	11	5	5	3.5	5.0	6	0.78	1890	0.13	1886
Northern Plateau.					29.3	− 2.2									3.14	+ 1.28															
Boisé City	2,750	27.15	30.05	1.27	34.2	+ 0.2	55	41.1	− 6	27.3	25	6	22.8	65.8	3.12	+ 1.56	3,943	se.	28	sw.	16	3	8	17	12	7.1	7.1	13	3.51	1881	0.04	1889
Baker City	3,430	26.38	30.04	1.32	27.7	.....	51	34.6	−11	20.8	25	7	19.8	76.2	2.08	.....	4,852	se.	36	se.	3	6	4	18	14	6.3	7.7	1	.....	.....	.....	.....
Spokane Falls	1,921	27.93	30.07	1.38	24.4	− 4.6	52	33.2	−23	15.6	34	6	18.6	79.8	3.15	+ 0.99	3,103	sw.	36	sw.	3	6	9	13	13	5.5	6.5	10	3.85	1881	0.34	1889
Walla Walla	1,018	28.95	30.07	1.22	31.1	.....	67	38.1	− 7	24.1	22	7	22.8	74.9	1.35	.....	5,286	sw.	50	sw.	3	4	15	9	10	5.6	7.8	5	1.78	1887	0.79	1889
N. Pac. Coast Region					37.3	− 2.7									7.91	− 1.22															
Fort Canby	179	29.76	29.96	1.20	38.8	− 3.2	52	43.5	17	34.2	16	3	32.0	77.4	7.37	+ 1.14	10,188	se.	70	s.	3	5	8	15	19	6.8	7.0	7	11.20	1885	2.53	1889
Neah Bay	.....	.....	.....	....	37.3	.....	51	42.9	20	31.7	22	7	.....	.....	8.51	− 2.63	.....	sw.	....	.....	...	7	4	17	13	...	...	7	18.50	1885	7.20	1887
Olympia	36	29.94	29.98	1.17	36.2	− 2.8	55	42.3	12	30.0	29	4	33.0	89.4	7.71	− 0.13	3,253	s.	21	n.	3	8	5	15	19	5.0	6.7	13	16.28	1881	1.40	1889
Port Angeles	14	29.93	29.94	1.31	32.5	− 4.5	46	39.0	7	26.0	26	4	29.8	91.8	4.76	+ 1.26	1,130	w.	16	e.	24	4	8	16	15	6.6	6.4	7	4.76	1890	0.99	1889
Tatoosh Island‡	.....	.....	.....	....	38.0	.....	50	42.0	30	34.1	.....	.....	.....	.....	6.64	.....	.....	se.	....	.....	...	15	0	13	16	...	...	7	13.28	1885	5.42	1888
Astoria	38	.....	.....	....	39.8	.....	53	45.2	16	34.5	18	5	.....	.....	11.48	.....	.....	sw	....	.....	...	7	6	15	17	...	...	7	11.48	1890	2.84	1883
Portland	80	29.91	30.00	1.15	38.5	− 1.5	60	45.1	10	31.9	26	5	32.0	79.6	9.85	+ 3.02	5,221	s.	36	s.	1	6	13	9	16	7.0	6.8	19	13.36	1881	1.07	1889
Roseburgh	523	29.49	30.06	1.05	40.4	− 1.6	61	47.4	13	33.3	32	5	35.0	80.8	9.24	+ 4.69	2,156	w.	23	s.	3	2	10	16	18	7.2	7.8	13	9.24	1890	0.70	1889
Mid. Pac. Coast Reg.					47.2	− 3.2									4.30	+ 0.77															
Eureka	64	30.01	30.07	0.91	44.4	.....	59	50.2	27	38.6	24	3	38.6	81.4	13.88	.....	4,997	n.	35	n.	26	5	9	14	19	6.2	7.1	4	13.88	1890	1.93	1889
Red Bluff	342	29.72	30.07	0.95	45.0	− 4.0	66	52.5	28	37.6	26	5	35.6	70.8	3.67	+ 0.03	6,838	se.	39	se.	15	9	8	11	13	5.1	5.2	13	16.66	1878	0.18	1886
Sacramento	64	30.02	30.09	0.88	47.4	− 2.6	67	54.5	32	40.4	23	7	39.1	76.8	4.00	+ 0.93	5,966	se.	36	nw.	13	10	9	9	9	3.8	4.6	13	8.04	1878	0.29	1886
San Francisco	60	30.03	30.10	0.83	49.1	− 2.9	64	55.0	36	43.2	18	7	40.0	74.6	5.16	+ 1.35	4,911	s.	36	s.	16	10	7	11	12	4.6	4.9	19	12.32	1878	0.24	1886
Point Reyes Light	.....	.....	.....	....	48.1	.....	63	53.5	34	42.7	20	6	.....	.....	3.75	.....	.....	nw.	....	.....	...	8	2	18	12	...	...	1	.....	.....	.....	.....
S. Pac. Coast Region.					54.2	− 0.2									1.53	− 1.58															
Fresno	328	29.76	30.11	0.66	47.2	.....	70	56.4	28	37.9	32	5	38.2	73.3	0.80	.....	3,466	e.	26	e.	16	6	13	9	7	3.5	4.4	3	0.80	1890	0.13	1888
Los Angeles	330	29.71	30.06	0.44	54.2	− 0.8	81	64.9	35	43.5	32	7	39.8	65.8	1.36	− 2.42	2,375	n.	18	w.	21	15	9	4	4	1.6	2.9	13	13.37	1884	0.01	1885
San Diego	93	29.97	30.07	0.42	54.3	+ 0.3	77	62.5	38	46.1	27	6	44.2	71.8	1.70	− 0.73	3,515	n.	30	s.	17	13	3	12	9	2.9	4.4	19	9.05	1884	0.02	1885

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record. * Two or more directions, dates, or years. † Precipitation measured at the Boston Water Works; takes the place of the measurement at the Signal Office. ‡ Received too late to be considered in departures, etc.

Chart I. Tracks of Areas of L



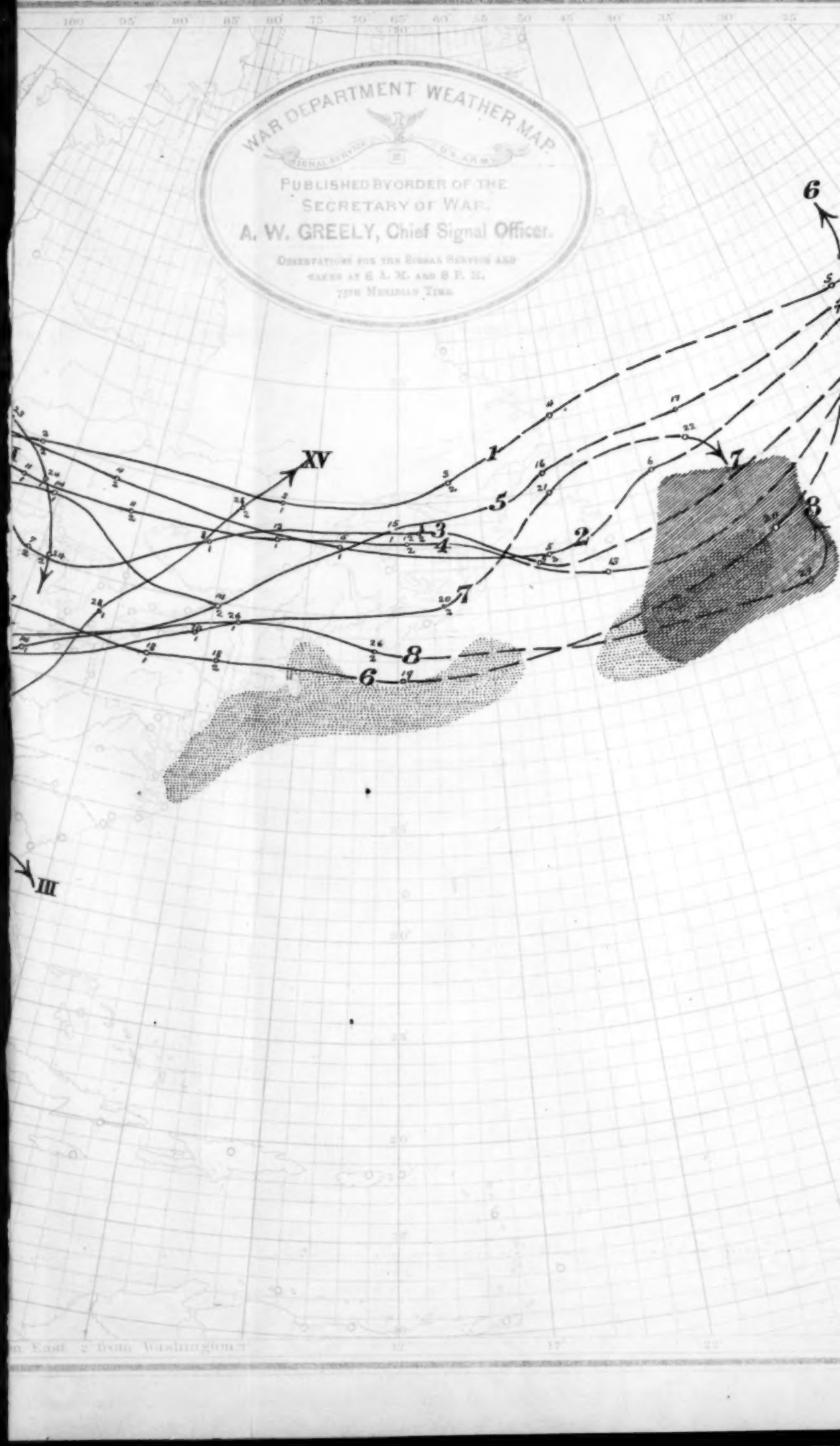
NOTES.

The Roman letters show number and order of areas of low pressure. The figures above the lines show the days of the month, those below (1 and 2) indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations.

The dotted shading (▒▒▒) indicates fog belts.

The ruled shading (▬▬) indicates the position in which field-ice or icebergs were observed.

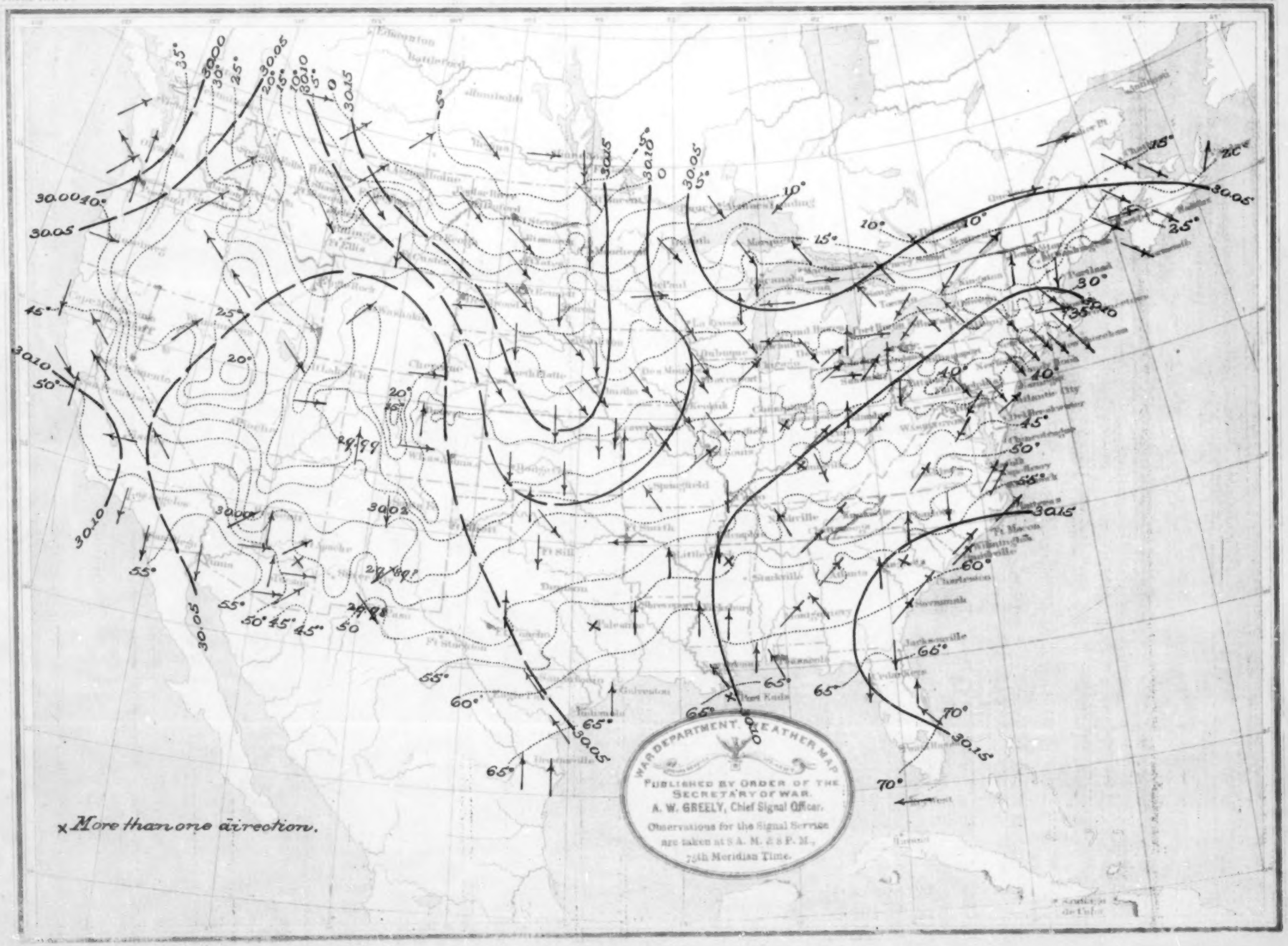
Chart I. Tracks of Areas of Low Pressure. February, 1890.




3
4
5
2
1
6
8

Form 806 P.

Chart II. Isobars, Isotherms, and Winds. February. 1890.



× More than one direction.

Chart III Precipitation February 1890.

Chart III. Precipitation. February 1890.

Form 106 F

Chart IV. Depth of Snow (inches) reported on ground February 28, 1890, and Limits of Freezing Weather.